

JOURNAL *of* FARM ECONOMICS

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SOME FUNDAMENTALS OF AGRICULTURAL POLICY¹

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EXPRESSIONS of views regarding our position as agricultural economists in matters relating to agricultural policy are not uniformly reassuring or comforting. Some look upon us as special pleaders for the farmer. One writer² has stated that view as follows: "The Department (of Agriculture) supports a great bureau of agricultural economics, and in all the states there are subsidized agricultural colleges also maintaining departments of agricultural economics. No other class in the population is so amply provided at public expense with the machinery and trained personnel for carrying forward its *special pleading*." (Italics are mine.) There are others who believe that agricultural economists are afraid to speak their minds on all phases of various programs because their institutions frown upon the practice.

It is not my function to attempt to speak for you as far as your views on this matter are concerned. Speaking for myself, however, I protest vehemently against classification in the category of special pleader. That is not the true function of agricultural economists. Nor does the observation with respect to institutional attitude apply to my university and if it applies to any institution represented here I hope it is the exceptional case and not the rule.

Academic freedom in education is not a scheme designed merely for the comfort and convenience of staff members. Its

¹ This paper was read at the meeting of the Western Farm Economics Association, Bozeman, Mont. July 6, 1938.

² Ayres, Leonard P., "The Economics of Recovery," p. 79.

deeper purpose is to protect and encourage the finding of facts, the application of analysis and reasoning, and the dissemination of the results. How can we be true to that trust if we allow ourselves to become special pleaders? An educator or researcher who assumes the role of special pleader has missed his calling. His job soon degenerates into efforts to justify whatever means may be employed to attain the desired end without much, if any, careful examination of the real desirability of the objective or of the soundness of the means.

Understand, I have no axe to grind with respect to special pleaders as such. They serve a useful purpose in bringing to the attention of the public various viewpoints. My point is merely that I do not regard such activity as the proper function of agricultural economists in educational and research institutions. It is my opinion that we can serve both the farmer and the general public much more effectively by sticking to our last.

As implied by these prefatory remarks, it is my belief that we should examine carefully into various agricultural programs and policies rather than merely to accept them on faith. A program may have the most laudable objectives and still fall far short of the ideal in the means employed for their attainment. A given program may serve a very useful purpose as a form of attack upon an emergency or short-run situation but produce an entirely different set of results if followed permanently. Human beings are strange and wondrous creations. Apparently, there are no exact duplicates. We are not all constructed alike and our views differ. It is not to be expected, nor do I think it desirable, for all of us to see eye to eye on all questions relating to agricultural policy. The problems are not of the simple arithmetic type, 2 plus 2 equal 4. However, as far as the fundamental principles are concerned I am sure we are much closer to unanimous agreement than suggested by quips one encounters in popular conversations.

All of us are keenly concerned with agricultural policy as manifested by current agricultural programs. Let us, therefore, direct our attention to some of the questions relating thereto. The major objective of current agricultural pro-

grams is that of improving the income of farmers. Main reliance for its attainment rests in efforts to raise prices of farm products rather than in a lowering of costs. The convenient target which has been set up is that of price parity or parity income.

Set up legislatively the concept of parity price has the advantage of being susceptible of measurement. But that very element of concreteness tends to lead to its blind acceptance. There is room for wide differences of opinion with respect to the choice of a proper base period. Moreover, while not at all generally appreciated, parity prices enforced over a period of time would introduce rigidities into our price structure which would make present "sticky" prices appear as merely a plaything in comparison. Automobiles supply an excellent illustration of a weakness of the parity price concept. What would cars have to sell for today, especially if quality improvements were considered, in order to bring them back to 1910-14 relationships to other commodities? Restoration of such a relationship might be a fine way to get us "back on our feet" literally but I suspect most of us prefer to rest our foot on the accelerator to pounding it on the pavement. It undoubtedly would solve the problem of parking on our campuses. Permanent price parity assumes two things. One, that price relationships in some past period were ideal; two, that the efficiencies of production for different products change at a uniform rate. Neither of these is true. Worshippers at the shrine of parity price ought to understand its limitations better.

Nor does shifting the objectives to the less tangible idea of parity income solve the problem. It is more realistic in that it acknowledges that price is not the only factor in income. However, it is more difficult to measure specifically and is therefore less acceptable as an objective in a legislated program. Problems arise as to how the parity income shall be determined. Shall the large numbers of farm people who really are not engaged actively in commercial farming be included? If so, shall the unemployed and the people on various low-income type of urban activity be included? Dollar income is one thing, real income is another. What consideration shall be given food, fuel, housing, security of employment

and the like? Shall parity income be sought for all persons engaged in agriculture regardless of whether they are needed or shall it be only for the number needed to supply available markets? Such questions are not carping criticisms. They go to the very fundamentals of our agricultural policy and their careful examination is essential to the development of satisfactory programs of action.

The invalidation of the original adjustment program by the Supreme Court decision early in 1936 led to a quick shift to the soil conservation and domestic allotment act. Temporarily, soil conservation has supplied a convenient medium for bringing about some adjustment in acres of certain staple market and feed crops. However, for a longer-run program there is need for some careful analysis of the appropriate place of soil conservation in the picture. It is not necessary to point out that there are aspects of soil conservation which are of public concern. Wind and water erosion may affect not merely the interests of the present occupier of the land but also those of persons and regions far removed from where the erosion takes place and of future generations. Questions of the amount and kind of erosion taking place and of the methods and expenditures justified in its control should supply the basis for developing programs to deal with it. Production adjustment and soil conservation are not in fact as intimately related as apparently assumed in current programs. The extent to which a given crop depletes the soil is determined by other factors than its relative abundance on the market. An adjustment program seeks to apply itself on farms generally in order to attain its objective. Attacks upon soil conservation, on the other hand, need to be adapted to the conditions existing on given farms and fields. The one is general, the other should be selective.

It will be desirable also to distinguish between public responsibility and that of the individual farmer. The right to use the soil should not be regarded as license to misuse it. Another point needing clarification is that relating to the distinction between control of soil erosion and the maintenance of fertility. The two are related but not synonymous. Maintenance of soil fertility in the main ought to be the responsibility of the farmer himself. If public funds are to be used in

building up soil fertility one justification presumably would be that yields will be increased and efficiency of production thereby improved. The gain then should show up in lowered prices to the consumer. However, the expressed objective of the present program is to raise prices rather than to bring about situations where lower prices will be acceptable.

If public funds are going to be spent for soil conservation, the public has a right to expect and demand results in that field. The use of soil conservation as a cloak for disguising subsidy payments to increase the income of farmers is open to serious question. If such subsidies are to be a part of public policy they ought to be made openly so that they will be considered on their own merits. Possible unfavorable effects on real soil erosion control programs of continuing the present dependence of adjustment on conservation should be foreseen before serious damage occurs.

Inadequacy of the soil conservation program as a means of holding production in check led to the consideration of more specific means of control. The unusual and extensive drouths which this country has experienced in several years recently focused attention on variations in output. This paved the way for popularizing the so-called "ever-normal granary." It has been broadly described as protection to producers against market-depressing supplies and to consumers against shortages. The idea has been oversold in that inadequate attention has been given to its limitations. Drawing comparisons with the scriptural story of Joseph and his storage operations appeals to the imagination. The benefit to the producer must lie in its effectiveness in raising income. Prices should be raised by taking supplies off the market in periods of excess production. However, net benefits involve not only consideration of this type of effect but also of the effect on prices when the out movement takes place together with the costs of carrying. The point perhaps will be made that when linked up with an adjustment program, subsequent production can be adjusted so that the supplies can be moved without lowering of price. That point assumes that curtailment is costless.

Adjustment of surpluses due to unusually favorable production conditions by carryover of the excess is one thing.

Attempting to use the "ever-normal granary" for recurring surpluses due to an overexpanded agriculture is quite another. The problem before us is of the latter type rather than the former. The plan is not adaptable to all products to the same degree. Some products are perishable and can not be stored indefinitely. In the case of a product such as cotton, where the United States is a major factor in the world supply the plan may place too much of the burden of making supply adjustments upon this country with sharing of benefits by other countries. Astute handling will be needed if it is not going to reduce our share in the world market. If we are to remain on an export basis for wheat, our price of the classes and grades involved will continue to be determined in world markets and such adjustments as we may make in the supplies we put on the market may produce effects which are not commensurate with costs to us. Wheat also illustrates another complicating factor. Here is a product made up of a variety of classes and grades and the surplus situation varies for different classes. They can not all be satisfactorily lumped under one head and given stereotyped treatment.

Evening out supplies of feed grains should have some influence in reducing variations in livestock numbers although the regularity of the hog and beef cycles indicates that feed supply is not the only force at work, so too much should not be expected from this. Regularizing supplies of feed grains involves a feature differing somewhat from that of market crops. If costs are not to become excessive, extensive shipment of supplies from one point to another will have to be avoided. The amount to be stored will need to be adjusted consequently in accordance with local supplies and variations in production locally.

The late Professor G. F. Warren in the pithy style for which he was noted, once characterized the "ever-normal granary" as being "easy to fill but hard to empty." As this observation suggests, there may be more support for moving supplies into storage than for taking them out. The Farm Board had some experience on this point. Were crop failure uniformly distributed among farmers this pressure might not be so great. Regions which have good crops in years of shortage naturally will prefer reaping the full advantage of the

higher prices, than to see supplies augmented from the "ever-normal granary." Nor is assurance any too great that production curtailment will be easy after the granary overflows. If a drastic acreage cut is imposed, political pressure may result in easing of restrictions.

The benefits to the consumer are easily exaggerated. Actual shortage to the point of want is unlikely in a country as large as the United States. A world crop failure is still more remote. If our concern for the consumer is more than mere window dressing, do we not need to realize that by lifting trade restrictions we can draw upon world supplies? Besides, the protection afforded is only partial because it can not be applied to products generally. In addition, the consumers will share in the costs of the scheme.

The role of commodity loans and parity payments included in the present program should have careful attention. The present act not only authorizes loans but prescribes the amounts to be loaned on certain crops under specified situations. Loans in excess of current market prices, even though made only when prices are low, are far from riskless. In substance they become a conditional sale to the government which the farmer may recall if the market goes above the loan value. Such loans represent added inducement for farmers to cooperate in the adjustment parts of the program in order to be eligible to take advantage of them. Beyond that they will tend to become a peg for prices. It may not be easy for the administration to avoid accumulations of supplies as a result of these loans. In the case of crops which normally are exported, such pegging will interfere with sale abroad at the lower world price. That aspect of the problem deserves more consideration than it has received.

The present act provides for parity payments on the included commodities "if and when" funds are made available for that purpose. A subsequent act has appropriated funds for partial payments. How generally is it recognized that such payments will in effect amount to fixing of prices as far as the recipients are concerned? Perhaps the country wants to embark on a program of guaranteed prices to farmers. That is one thing. To do so without recognition of the nature of the steps being taken is quite another. The country in the

past has shied from price fixing and I discover no reason for believing that sentiment has changed. Not all of the results of such a venture will be happy and this is certainly one place where there ought to be careful looking before there is much leaping.

With the world as touchy as it is today in matters of international trade, the possibility that parity payments to producers of products which are exported may be viewed as creating a situation of export dumping, should be kept in mind. If they should be so regarded, our efforts at trade recovery may receive a serious set back.

How generally is it recognized that our efforts at price raising lead us further in the direction of economic nationalism? Efforts to raise prices within this country without relation to the level of prices existing elsewhere, if successful, soon call for additional protection against outside influences. The dilemma the country finds itself in, is that agriculture is in a state of expansion which calls for the continuance and recapture of a foreign market of sizeable proportions if drastic curtailment is not going to be forced on us. Some object to both production curtailment and efforts to restore foreign markets. They clearly are not very realistic. But are the people who think we can maintain an arbitrary level of prices here at home and still sell freely to the world any more realistic?

Quite a bit of the attention of existing legislation centers on a relatively small group of staple crops. Will this be adequate for a control program over a period of time or will it be necessary to extend efforts to all lines if programs are to continue? Not all groups or regions are equally "sold" on the program at present. They are not all affected in the same manner. Dairy leaders call attention to the possibility that payments to encourage farmers to grow grass and legumes may turn out to be a subsidy for farmers to enter or expand dairying. A popular answer intended to quiet these fears is that if other lines are given satisfactory prices they will not shift their production. For example, it is pointed out that cotton farmers have tended to shift to other lines when cotton prices have been low, not when they have been high. The argument is not convincing. What cotton farmers may do

when left free to produce cotton on as many acres as they will, does not indicate what they will do when there are limits put upon cotton acreage. Efforts to improve some aspects of the agricultural situation may have unexpected repercussions elsewhere. No end is served by making the problems of agricultural adjustment appear simple and easy. They are complicated and the correct answers are not all in the back of the book.

Just where our agricultural adjustment program is taking us is none too clear at the present time. Are we going to move in the direction of more control over agriculture? The trend towards subsidy would seem to so indicate. If farmers are to be subsidized liberally it naturally follows that they must accept controls to protect the public against unlimited drains on the treasury. One difficulty with subsidies is that once such a program is entered upon vested rights are created and it is not easy to withdraw them.

Discussions of economic planning have occupied a prominent place in recent years. Planning which represents the will of a dictatorship is one thing. In a democracy, planning must stay rather close to the will and the understanding of the public. Are the leaders themselves any too clear about where we ought to go with our agriculture? Is it not important for this country to give some time and attention to fundamental problems and not be wrapped up solely in working out details of current programs? Is our agriculture likely to be overexpanded for future markets? If not, can not the pricing forces operating through the markets be relied upon to yield the farmers their share of the national income? If it is overexpanded, shall we build up the incomes of all persons now dependent upon agriculture regardless of whether they are all needed in this line or shall we endeavor to keep the way open for shifts into lines where there may be more need for their services over the longer run? Can we employ a subsidy in such a way that it will encourage rather than hinder occupational shifts? A subsidy which retains agriculture in a state of overexpansion will not add permanently to the average per capita income of those dependent upon this industry and will represent an added burden to society of which the farmers are a part.

If increased income is provided for farmers over the longer run, how much of it will be used for the "more abundant life" and to what extent will it lead to increased land values which will benefit only the man who holds title while the rise takes place? In this connection mention might be made of the lowered interest rates on farm mortgage loans of the Farm Credit Administration. Here is a public subsidy granted not to all farmers but to a certain group of farm borrowers without any distinction as to whether or not they are in need. It serves to lessen the short-run debt load of the farmers it reaches and probably enables some to carry on who otherwise would have to go under. To that extent, it may be said to have a laudable objective. But, if continued, the probable result is that it will have to be extended to farm borrowers generally and that the lower rate will be capitalized into higher land values rather than result in a smaller debt load permanently. Thus far, the policy has represented a response to the interests of the individuals concerned rather than being developed on the basis of long-run public welfare. Which will be the major consideration in the long run depends upon public interest and understanding.

Another aspect of agricultural policy is suggested by the references to "disadvantaged classes" which occurs rather frequently in current discussions. It is well that concern is being shown for the welfare of the underprivileged, particularly if it leads to improvement of their effectiveness as producers and thereby enables them to climb out of that classification. However, is sufficient consideration being given to the effect of the inclusion of a considerable number of "disadvantaged farmers" in arriving at farm income and parity income figures? After all, most of the market supplies of farm products come from a rather small proportion of the total farm population. Should we not consider their income status separately from that of the so-called "disadvantaged group"? Increases in income from price enhancement will accrue more particularly to commercial farmers than to those who are largely self-sufficient.

The present tendency is to display sentiment favorable to the "family farm" without any very definite concept of what such a farm is. Practically all farms in this country are family

farms. If payments for soil conservation or for production adjustments are actually for those purposes rather than merely subsidies to add to farm incomes, it is difficult to see any real reason for placing small units in a different class from those whose ownership may happen to be concentrated in relatively large holders. Accepting the payments as subsidies to raise income, is it good policy to favor the very small farm? One important aim in any agricultural program should be that of encouraging efficient and economic production. Many of our farm units are too small from this standpoint and any program of subsidy ought to aim at remedying this condition rather than to encourage its continuance. If loss of markets necessitates permanent curtailment of production, it may be achieved in part by "low-pressure," that is less intensive, farming. But if such a change is to take place, the acreage in many farm units needs to be increased in order that land may be farmed more extensively without sacrificing on net returns to the operator.

The nation has become aroused over problems of tenancy and is disposed to do something about it. Here again is another place where, if I may borrow an expression from Dr. Joseph S. Davis, "hard, cool heads must balance warm, soft hearts." No single attack such as that of subsidizing all tenants to enable them to become owners will solve the problem. It calls for a variety of improvements adapted to the problem in each situation.

As a concluding thought may I give expression to the feeling that consideration of programs and policies often is too superficial. For example, emphasis in agricultural, labor and industrial programs has been placed largely on price and wage maintenance and raising. The reason for that is easily understood. However, does it not need to be impressed upon the country that income is dependent upon production as well as on price? Price is a factor in determining upon the distribution of the results. Cutting the pie a different way may increase the portions going to some by decreasing the size of the portions of others. Improvements in the way the national income is distributed undoubtedly are possible. Let us not forget, however, that the only way the portions of all can be increased is by increasing the size of the pie, that is by

producing more instead of less. Improvement in the agricultural situation continues to depend to an important extent upon a recovery of activity in other lines.

There is too much justification of one policy by another. Rather than accept one form of subsidy as justification for another we ought to examine critically the justification for some of the subsidies which have been established. A satisfactory economic policy for the nation can not be arrived at through working out programs and policies for different lines and problems in water-tight compartments.

May I conclude with a brief observation on one more angle of this general subject. There is much talk of economic democracy and democratic processes. I am not at all sure that all of this talk is based upon an understanding of what democratic procedure really involves. True democracy requires intelligent understanding of and participation in programs by the rank and file rather than blind acceptance of slogans and unthinking following of leadership. To arrive at understanding we need more discussion of fundamentals, more questioning, more reasoning and thinking. Pressure groups are in evidence. Unfortunately their efforts are often shortsighted and overlook general welfare. Nor are they always representative of the best interests of those whom they claim to represent. They become so intent on a special part of the economic picture that they overlook other parts of equal or greater importance. Economic plans should be tested by their appeal to our intelligence rather than to our emotions. As I conceive the function of educational agencies, it is not that of doing the thinking for the people but that of aiding them in getting information and in studying various angles of problems in order to arrive at intelligent conclusions. If the people do not do their own thinking, they will discover that there are those perfectly willing to do it for them and then to dictate how the people shall act. That is not democracy.

AGRICULTURAL PLANNING AND THE AGRICULTURAL ECONOMIST

O. V. WELLS

Agricultural Adjustment Administration

SINCE 1933 almost every agricultural economist has been engaged, either directly or indirectly, in the development, administration, or appraisal of the several agricultural programs administered by the Agricultural Adjustment Administration, the Farm Security Administration, the Land Utilization Program of the Bureau of Agricultural Economics, the Soil Conservation Service, the Farm Credit Administration, and such agencies as the Tennessee Valley Authority and the Division of Trade Agreements of the State Department.

Within this short period, the fiction has grown up that the various programs or plans are developed almost altogether by "bureaucrats," "brain-trusters," and "swivel-chair farmers" in regional offices or in Washington. Nor has this fiction been very seriously challenged by the economists themselves, except to the extent that they have pleaded that their data and observations have been derived from farmers and that the success of their programs indicated farmer approval.

Actually, of course, the agricultural economists are only one of the several groups interested and actively participating in the planning process as it is now working and as it may be expected to continue to work under a democratic government. As a result, it seems worthwhile to outline the several steps in the planning process, and to consider the part that agricultural economists can expect to play in program planning and development.

I

Current comment and observation of some of the newspaper columnists notwithstanding, almost every recent development in the field of agricultural policy has been in direct response to a demand on the part of farmers for a program designed to meet a particular problem, or to achieve some definite end. It is this general demand which sets many of the problems in the field of agricultural research, which sustains

discussion and agitation over the considerable period necessary to convince the general public that a remedial program is needed, and which activates the politician and supplies the driving force for such legislation as the Farm Credit Act of 1933, the Soil Conservation and Domestic Allotment Act of 1936, the Bankhead-Jones Farm Tenant Act of 1937, and the Agricultural Adjustment Acts of 1933 and 1938.

The first step in the planning process is the recognition on the part of farmers of a particular situation that needs to be remedied, or a particular line of action that should be encouraged. This recognition and discussion of the situation on the part of farmers is concerned with and is chiefly valuable in that it sets the goal rather than that it defines the means by which the goal may be attained. That is, the particular problem is recognized and the result desired is defined, but the economic devices and administrative organization by which the desired ends may be attained are defined or considered only to the extent that they are implied in the statement of the goal. To the extent that they are considered, costs and administrative detail are underestimated and the simplicity of the schemes advanced is usually overstressed.

The second step is the recognition of farmers' demands by editors, agricultural workers, State and national officials, and others interested in the agricultural field. Often the first reaction of this class to the farmers' grievances and desire for remedial action is to defend the current situation and to explain why a new program or an additional line of action is not needed. But the continuing pressure of farm sentiment soon forces officials and agricultural workers to recognize the need for improvement, to align themselves with the farm group, and to consider the several alternative lines of action that may be followed.¹

Discussion spreads, and speeches, editorials, books, and debates on proposed legislation are called forth in almost direct ratio to the severity and geographical spread of the

¹ Sometimes suggestions for action are started by the agricultural workers themselves and are sold to the farm group. But such suggestions usually drag out a slow existence unless they are restatements of not too clearly expressed or organized demands of the farmers, or the situation which the suggestion is designed to meet becomes increasingly aggravated, or the suggestion is so altered as to offer at least a partial solution to some other problem.

problem involved. Agricultural economists become interested in the problem somewhere in this second step, and usually indicate that the relevant data are not available, or that further fact-finding is needed, and so begin work in the research field. Goals are more clearly defined, and the alternative methods or measures by which such goals may be reached are discussed and developed in considerable detail. Arguments are developed both for and against, and the issue is often complicated by suggestions for action along a number of slightly related or almost non-related lines as well as along the main line which gives force and direction to the discussion.

The third step is a natural development from the second. General agreement must be reached as to the type of program to be followed, legislation passed, and administrative detail developed. That is, the discussion of the problem must develop to the point where a very considerable number of the farmers and their representatives are agreed that some particular program should be tried. Once this point is reached, the legislative battle is begun in earnest—legislators begin to declare themselves for or against the program or the enabling act; questions of costs and appropriations are advanced; administrative officials or agencies are consulted; and pressure groups representing every interest that may be touched by the proposed program swing into action.

Agricultural economists and administrators must consider the administrative problems involved, judgments must be arrived at as to rules, regulations, rates, and the exact manner in which the law is to be administered, and a reasonable appraisal of the economic and social effects of the program must be developed. In fact, some economists commonly consider this type of work as constituting the whole field of agricultural planning rather than as simply being one step in a process which has its roots far back in the response of farmers to their social and economic environment and which is still subject to substantial amendment by the farmers themselves after the program is announced. It is this process of amendment that constitutes the fourth step.

When farmers and agricultural workers first recognize and begin to discuss the particular problem to which a program is

eventually addressed, their attention is usually centered upon some generalized goal. But once legislation has been passed and a precise program formulated and put into effect, farmers and agricultural workers who are close to the farmers immediately become aware of the detailed method by which it is proposed to reach the desired goal. As a result, farmers are often the first to realize that rules are too harsh or that regulations are so lax as to require only nominal compliance, and pressure is soon exerted upon the administrators to change the program. This change is brought about within the regular administrative framework to the extent that community-to-community or county-to-county differences in administrative detail can be allowed. But where this is not possible, the rules and regulations applying generally over the region or the Nation must be changed, or the enabling legislation amended. This means, then, that it is the farmers who first start the movement that results in the development and announcement of a specific program; and it is this same group who give the final touches to the program as it actually operates in the field.

The several steps are of course closely interrelated, and the process just outlined is rarely carried through before some new problem demands attention, or before it is decided that the particular program under discussion or actually in operation will not give the desired result, or that some revision or amendment is needed. The courts are also concerned in this process, especially in those instances where the program breaks new ground.² The process is continual; and although economists and administrators may wish for stabilization, they are often offered only the choice of helping guide and direct, especially in periods of severe stress such as we have been passing through since 1930.

II

Perhaps the easiest way to make the general outline just discussed more concrete is to consider briefly some of the

² An excellent discussion of the legal background of recent legislation affecting land use will be found in: Glick, Philip M., "The Soil and the Law," *JOURNAL OF FARM ECONOMICS*, XX (May and August, 1938).

forces which determined the form of the Agricultural Adjustment Act of 1938.³

Almost without exception the ideas and devices set forth in the several sections of this Act can all be traced back through suggestions for agricultural legislation and the general agitation for farm relief which first began on a nationwide scale in 1921-22.⁴ Although American farmers were concerned occasionally with agricultural relief and acreage control prior to 1921, they were almost wholly unprepared for the abrupt price break and general deflation which started in the fall of 1920. This sudden drop in prices following almost a generation of rising prices and several years of land speculation almost immediately crystallized agricultural sentiment on the general proposition that some form of agricultural relief was needed.

Although farmers generally were agreed as to the need for remedial action, they were by no means agreed on the specific type of program they wanted. The Illinois Agricultural Association resolved: "That we favor a reduction in the corn acreage of Illinois in 1922 of at least 15 per cent and recommend that the President and the Secretary of the Association apportion this decrease among the various counties in accordance with sound farm practices . . . We further recommend that special efforts be made to secure the active cooperation of farm bureau federations and other organizations in other states in making similar reductions in corn acreage for 1922." Both the *Prairie Farmer* and *Wallaces' Farmer* approved this suggestion, but corn acreage remained at about the same level as before the crash as farmers both inside and outside the Corn Belt turned from the cash crops toward feed crops and livestock.⁵

³ For a full draft of this Act, as amended, the reader is referred to: *Annotated Compilation of the Soil Conservation and Domestic Allotment Act, As Amended, The Agricultural Adjustment Act of 1938, As Amended and Acts Relating Thereto*. Compiled under the Direction of the Solicitor, U. S. Department of Agriculture, Agricultural Adjustment Administration, June, 1938.

⁴ A more detailed account of the farm relief movement from 1920 through 1936 will be found in: Black, J. D., *Agricultural Reform in the United States* (New York, 1929), Ch. III; Wallace, Henry A., *New Frontiers* (New York, 1934) Ch. XIII-XV; and Nourse, Edwin G., Davis, Joseph S., and Black, John D., *Three Years of the Agricultural Adjustment Administration* (Washington, 1937), Ch. I.

⁵ *The Prairie Farmer*, Chicago, January 21, 1922; and *Wallaces' Farmer*, Des Moines, February 10, 1922.

American agriculture had traditionally relied upon the export market and had been pulled out of more than one previous depression by this route, especially the depression of 1873.⁶ As the export market began to improve due to the general resumption of world trade and the need of war-torn Europe for agricultural supplies, a whole flock of export schemes were advanced. Export debentures, export subsidies, the equalization fee plans embodied in the McNary-Haugen Bills from 1924 through 1928, and various versions of the domestic allotment plan were discussed.

American agriculture also discovered a new interest in the twin ideas of orderly marketing and cooperative action, and the Capper-Volstead Act authorizing the association of agricultural producers was passed early in 1922. American farmers also wanted easier credit, stockyards and exchange regulation, lower freight rates, and increased tariffs to protect them from foreign competition. But these were suggestions that had been fought over before, and the main argument, aside from the cooperative marketing movement, centered around the equalization fee or McNary-Haugen plan from 1924 to 1928. Much of this agitation still has a familiar ring—"equality for agriculture," "fair exchange value," and the "equalization fee" concepts are still important in the fight for agricultural relief.

The agricultural economists were soon drawn into the discussion. They estimated costs, studied the factors affecting agricultural prices, and calculated indexes of prices paid and prices received. Workers in the farm management field along with other agricultural specialists endeavored to encourage more efficient use of labor, better farm organization, and lower costs of production; and agricultural economists generally devoted an increasing amount of their time to agricultural outlook work, which started in 1923.

Despite the continued discussion and agitation, and the increasing strength of the agricultural bloc in Congress, even so shrewd an observer as E. G. Nourse was led to remark early in 1929 that "Agriculture threatens to rival the weather as a topic of dolorous conversation," even though it was ad-

⁶ Wells, O. V., "The Depression of 1873-79," *JOURNAL OF FARM ECONOMICS*, XIX (May, 1937).

mitted generally that the farm income was not at such a level as to allow farmers to maintain a standard of living comparable to that of most other groups in the national population.⁷

But agriculture had been promised a general farm bill in 1928, and the Federal Farm Board was provided for in the Federal Marketing Act, approved in June, 1929. Created to promote "orderly marketing" and cooperative organization, the Board spent most of its funds in stabilization operations in the wheat and cotton markets in 1930 and 1931. As a result, the Board soon reached the decision that no form of price improvement, other than an increase in consumer demand, could be expected to be effective unless accompanied by a more efficient production control than could then be obtained.

Meanwhile, the depression continued to fall with cruel force on the American farmer, the export market virtually disappeared, and the argument for production control began to gain ground. Control legislation was freely discussed in 1932, and the original Agricultural Adjustment Act was passed in the spring of 1933. Under this act, farmers entered into contracts to reduce acreage in return for benefit payments, financed chiefly by processing taxes on the commodity concerned. But the cotton situation was so serious that the cotton farmers were soon asking for marketing quotas to force non-cooperating producers into line, and these requests led to the passage of the Bankhead Cotton Control Act which was soon followed by similar quota legislation for tobacco in the form of the Kerr-Smith Tobacco Control Act.

The adjustment program, however, was brought to a sharp halt by the Supreme Court decision in the *Hoosac Mills Case* in January, 1936.⁸ This decision, in turn, helped shape the Soil Conservation and Domestic Allotment Act of 1936 and the Agricultural Adjustment Act of 1938. Under the Conservation Act, an open or unilateral offer on the part of the Secretary replaced the contracts under the original adjustment program, conditional payments replaced benefit payments, direct appropriations replaced processing taxes, and the emphasis was shifted from acreage control toward agri-

⁷ Nourse, E. G., *Recent Economic Changes* (New York, 1929), II, Ch. 8.

⁸ *United States v. Butler*, 297 U.S. 1 (1936).

cultural conservation. The Adjustment Act, in turn, is designed to integrate a program that includes conservation on a nation-wide scale; acreage allotments to help stabilize production; crop-loan and marketing quota provisions designed to insure stabilized marketing; crop insurance for wheat; marketing agreements for perishable crops and milk; subsidies for the diversion of agricultural products into new uses, non-commercial channels, or export; the establishment of laboratories for developing new uses for agricultural products; and price adjustment payments designed to offset differences between parity prices and prices actually received.

III

Agricultural economics is what economists make it, and the part of the agricultural economist in program planning and development depends almost altogether upon the particular agricultural economist.

Much has been written with respect to the functions of the economist. Morgenstern, for example, is certain that "theoretical economics is neutral as between all the possible circumstances to which it can be applied" and never strays far from this point; while A. C. Pigou is willing to admit that "The fact that we are without the data and the instruments of thought necessary for assured judgment, does not entitle us to sit back with folded hands. For to sit so is itself to take a decision; to make the great refusal, to declare ourselves in advance opponents of any change Something, however crude and tentative, must be adventured."⁹

Actually, of course, agricultural planning is an applied rather than a theoretical science, and any realistic approach requires a considerable excursion into the field of value judgment. The extent to which the agricultural economist is willing and able to work within this field is dependent in large part upon his temperament and background. For convenience, we may consider economists as being divided into three groups, a rather large group who consider themselves as unbiased scientists and who argue and sometimes act as if economics were a neutral science indeed; and two smaller

⁹ Morgenstern, Oskar, *The Limits of Economics* (translated by Vera Smith, London, 1937); and Pigou, A. C., *Socialism vs. Capitalism* (London, 1937), Ch. IX.

groups, one which includes those economists who are frankly interested in reform and are concerned chiefly with bettering the social status of the agricultural population, and another which includes those economists who are concerned chiefly with translating the work of other economists and agricultural researchers into a practical program, and whose talents lie chiefly within the fields of coordination and administration.¹⁰

At their best, the economists or "academicians" within our first group are concerned chiefly with the study of sequences or relationships, and the development of abstract analyses or consistent systems of behavior within the economic field. But this first group also includes a considerable number of researchers whose answer to every problem is the desire to gather more facts, whose vision of agricultural economics is limited to schedules, interviews, tabulations, and the conclusion that more research is needed; and a considerable number of critics or essayists who find a rather wide field for the exercise of a brilliant and often ironical wit in the observation of economic behavior in general, and the workings of "action programs" in particular, and who usually are able to maneuver from position to position without ever going on record as to just what solution they think best.

This group—the theorists, the researchers, and the critics—can and do contribute to the process of program planning and development. As indicated earlier, the researchers usually become interested in the process somewhere during the second step, and research is usually needed at this point in order to define or measure more clearly the severity and magnitude of the problem under discussion. The theorists' studies of usual sequences and consistent relationships, in turn, can often serve as a guide or standard which farmers, agricultural workers, and legislators can use in estimating the economic effectiveness and social consequences of the various alternatives advanced. And the critics, of course, serve to keep the administrators irritated, and often force a more careful consideration of both aims and administrative method than otherwise could be expected.

¹⁰ For a similar classification see "Aspects of Planning" in *Planning*, No. 113, December 28, 1937, published at 16, Queen Anne's Gate, London, S.W.1.

But many of the economists in this group are in an anomalous position. As educators and researchers they feel that they cannot become too closely allied or identified with any particular political group or movement. Yet they realize that many farm people look to them for information or leadership, and that their salaries and appointments trace back to the desire of these same people for agricultural improvement. Perhaps the best statement of the dilemma created by this situation is contained in the introduction to a recent state college bulletin:

"Any attempt to describe the role of the land-grant college in governmental agricultural programs should be predicated on the fundamental proposition that, through independent research and educational establishments, these institutions are enabled to provide and disseminate disinterested information, counsel and measurement pertinent to such programs and that these services are so valuable and vital in a democratically-organized society that they should never be jeopardized or encroached upon in any way. Apart from this, the colleges are free to give wholehearted cooperation

"One thing must, however, be recognized from the very beginning. No cardinal program of agricultural betterment is ever enacted without its becoming identified by the general public with the political party in power at the time of its adoption. Consequently it becomes a matter of great delicacy to show with precision how the land-grant college can make a significant contribution to the success of a program and yet avoid loss of the perfect detachment and objectivity which, under all circumstances, it should maintain."¹¹

The economists in our other two groups, the "reformers" and the "administrators," usually develop from the same background and have much in common with the academic group, except for certain differences in temperament and their interpretation of the functions of an economist.

As a rule, the economists who are chiefly interested in reform are a varied and colorful lot, impatient alike of theoretical analyses and of administrative detail. Unlike the academicians, the economists in this group are little worried

¹¹ *The Role of the Land-Grant College in Governmental Agricultural Programs*, The Iowa State College Bulletin, XXXVIII (June, 1938).

about the validity of a subjective approach, or any nice discrimination between their actions in the role of economists and their work as agitators within the field of their especial interest. Instead, they often pride themselves upon the use of an institutional approach, and usually are more than willing to be considered as pioneers on a new social front.

As a result, the economists in this group often play an important part in program planning and development, even though it may sometimes appear that their genius consists chiefly of tearing the existing social order apart without too much assurance as to how it should be reassembled. Their interest in any particular movement usually develops early in the discussion stage; and they often themselves conceive needed changes and endeavor to arouse farmers and others to action. Although they often fail, they sometimes succeed, either because of a crusading enthusiasm or a persistent single-track approach which eventually obtains a grudging but gradual recognition among farm leaders and fellow members of their craft.

The administrative economists are also little worried about many of the niceties of the science which the academicians hold most dear, and are interested in statistics and research only to the extent that such activities serve toward the development of a practical program. At their worst, these economists are dismally occupied with administrative routine and a running fight with the critics, so that they have little time to spend in the planning field. At their best, however, they are actively concerned with the whole field of program planning, and are the "generalists" or "social engineers" which Black, Davis, and Wilson have envisaged.¹² To be successful, an economist in this field must be able to see clearly the problem or situation which needs to be remedied, must be able to marshal the relevant facts, to separate the important from the unimportant, and to develop a solution that will "commend itself to the common sense of the intel-

¹² Black, A. G., "The Need for 'Generalists,'" *JOURNAL OF FARM ECONOMICS*, XVIII (November, 1936); Davis, Joseph S., "Statistics and Social Engineering," *Journal of the American Statistical Association*, XXXII (March, 1937); and Wilson, M. L., "New Horizons in Agricultural Economics," *JOURNAL OF FARM ECONOMICS*, XX (February, 1938).

ligent layman."¹³ In addition, such an economist must have "a wide experience of men and of affairs and a strong 'feel' for what, with the human instruments available, will or will not work."¹⁴

The economists in this group, whether serving as economic advisors or administrators, must evaluate not only *what should be done* but also *what can be done* considering the alternatives that are open and the resources at hand. As a result, the administrative economists are an almost constant source of disappointment to those reformers and academicians who work chiefly in terms of the ideal solution, and who usually underestimate the difficulties of successfully planning and operating an action program.

In conclusion, attention is called to the fact that the work of each of the several groups of agricultural economists is needed in the development of any successful agricultural program. But the specialists should realize that their work can rarely do more than contribute toward the partial solution of the complex problems with which American agriculture is currently faced. The administrative economists, in turn, should realize that theirs is essentially a synthesizing and coordinating task, and that both the help of the specialists and a correct understanding of the democratic and continuing nature of the planning process is essential if their work is to bear fruit.¹⁵

¹³ Black, A. G., *op. cit.*

¹⁴ Pigou, A. C., *op. cit.*

¹⁵ "Friction could be minimised if the supporters of each approach would give up the illusion that theirs is a complete answer to the problem and would frankly recognise that they are arbitrarily selecting certain factors for attention because the field of their consciousness and the sweep of their intelligence are quite naturally too limited to face the whole complex of philosophic, ethical, social, economic, administrative and technical questions with which they are confronted." *Aspects of Planning, Planning, op. cit.*

THEME OF PLANT AND ANIMAL DESTRUCTION IN ECONOMIC HISTORY¹

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OUR Zeitgeist is congenial to debate and to the planning of our future by resolution. Perhaps such a mood marks the beginning of a great era, but even though we be far better social engineers than I think we are, it is still most important to keep track of the present as to its position on the long graph of history, to see where we stand on the trend curves of social change. We have neglected dreadfully, in our impatience to get at universals, the "natural history" of man, which is also expressed as *die Weltgeschichte ist das Weltgericht*. Institutions and outlooks have their origin in time and place; they spread from one group to another; with lapse of time and shifts of place they undergo change; they meet competition and resistance. Origins, derivations, and survivals are the basic determinations of social dynamics. How much of social science have we that has meaning apart from relations of space and time? We are not metaphysicists, we know even the Logos only as a term in culture history. Today's triumph in social theory is tomorrow's footnote to culture history. The facts we dig up may find permanent place in human learning. The constructions we place upon them, if they survive, survive as data of history.

In social science interpreted as culture history there is a dominant geographic theme which deals with the growing mastery of man over his environment. Antiphonal thereto is the revenge of an outraged nature on man. It is possible to sketch the dynamics of human history in terms of this antithesis.

We have traced the beginning of our direct lineage back about 25,000 years, when *Homo sapiens* makes his appearance as an apparently finished product of evolution. More than half, perhaps two-thirds, of human history has passed before we come to the tremendous achievement of plant and animal domestication. This marks the major step forward

¹ Presidential address given at the Eighth Annual Meeting of the Social Science Research Conference of the Pacific Coast.

by man in his use of nature. It is carried out for a long time without any disturbance in the relation of man to his environment. Though growing steadily in cultural grace and stature, man long remains in symbiotic balance.

Perhaps as far back as Neolithic time, the first ominous discordance develops. The dry interiors of the Old World from Cape Verde to Mongolia are today a far more meager and more difficult human habitat than was true in early Neolithic. We know that their deterioration is much greater than can be accounted for by climatic change. Under similar physical conditions, the New World steppes and deserts bear a varied and useful cover of vegetation, whereas the Old World dry lands show tremendous wastes of shifting sand and denuded rock surface. Moisture values are not at all minimal in some of the bleakest parts of the Sahara and Arabia, for instance. There are successful drought tolerant plants aplenty in the Old World. The inference, therefore, is that the discrepancy between vegetation and climate in the Old World is due to cultural influence. Specifically, ancient overgrazing by herding peoples is blamed for the bareness of much of the great interior of the Old World. The damage developed perhaps three or four thousand years ago. Lapse of time has brought no repair of this destruction. The dry lands of the center of the Old World are permanently and sadly diminished in their utility.

The next major destruction of habitat values is associated with the Mediterranean lands and is assigned to the latter days of Rome or to the disordered period immediately following. Here again we know that modern productivity and known condition of land at the beginning of the Christian era do not coincide. The upland landscapes of the Mediterranean are not in line with their geomorphologic situation. Bare rocks obtrude themselves on slopes where they do not belong. Normal soil profiles are wanting. The vegetation shows many characteristics of regressions. Destructive exploitation has damaged seriously and permanently a great share of the lands about the Mediterranean. In spite of the lapse of many centuries, we have no evidence of significant regeneration of resource, but probably rather that of continued physical degeneration.

With these two major exceptions, we know of scarcely any record of destructive exploitation in all the span of human existence until we enter the period of modern history, when transatlantic expansion of European commerce, peoples, and governments, takes place. Then begins what may well be the tragic, rather than the great age of man. We have glorified this period in terms of a romantic view of colonization and of the frontier. There is a dark obverse to the picture, which we have regarded scarcely at all.

Much has been made of the disastrous impact of Spain on the New World. The polemics of Las Casas were carried on by Spain's political rivals and his theme of the Spanish destruction of the Indies lives on in popular misconceptions of the Spanish colonies. The first half century, following the discovery, was indeed destructive. Then a desolation of the Indies by depopulation appeared imminent. These expectations, however, were realized only in part, partly because the severity of Old World epidemic diseases diminished and partly because of an increasingly effective governmental protection of native population and natural resources. The Spanish government developed and applied principles of conservative stewardship, for which we find no parallels in other colonial countries at the time.

In the late 18th Century the progressively and rapidly cumulative destructive effects of European exploitation become marked. They are indeed an important and integral part of the industrial and commercial revolution. In the space of a century and a half—only two full life-times—more damage has been done to the productive capacity of the world than in all of human history preceding. The previously characteristic manner of living within the means of an area, by use of its actual "surplus," is replaced at this time by a reckless glutting of resource for quick "profit." The early outstanding illustrations are the wearing out of Virginia by tobacco planting and the effects of the China trade. The westward movement of Virginians was conditioned largely by the destruction of the land through tobacco. The development of the China trade via Cape Horn and the Chinese demand for furs and other animals products led quickly to a spoliation of pelagic mammals from the Falkland and South Orkney

Islands to the Bering Sea. The opening of the 19th Century, with the initiation of upland cotton planting, set our South definitely on its way to the permanent crisis in which it now is. In 1846 Charles Lyell described graphically the great gullies near Milledgeville, Georgia, and stated that they had not been in existence twenty years before.² In 1863 George Marsh, distinguished jurist and forgotten scientist, wrote the first description and analysis of the destruction of our basis of subsistence.³ In the early nineties the washing out of western grazing lands became notable, a decade after the last great herd of buffalo was exterminated. At the outbreak of the World War the last passenger pigeon was dead and the last important stand of the white pine of the Great Lakes was being cut. In the present decade the top soil of the wheat fields of the Great Plains is being carried by dust storms as far as the Atlantic. These are a few notes toward a history of the modern age. The modern world has been built on a progressive using up of its real capital.

The apparent paradox results that the lands of recent settlement are the worn and worn-out parts of the world, not the lands of old civilization. The United States heads the list of exploited and dissipated land wealth. Physically, Latin America is in much better shape than our own country. The contrast in condition of surface, soil, and vegetation is apparent at the international border between the United States and Mexico. For a reconstruction of upland soil profiles and normal vegetation cover of California we must go to Lower California. Chihuahua shows us what New Mexico was like a generation ago. The other parts of the world that have been opened to commerce in the last century and a half show parallels to the destructive exploitation of the United States. South Africa and Australia are well aware of their serious problems of conservation. South Russia is now becoming an active field for the study of soil erosion. Increasingly troublesome dust storms are sweeping the pampas of the Argentine (which is not characteristically Latin American in its economy), whereas more primitive Uruguay still has its land capital almost undiminished.

² *A Second Visit to the United States of North America*, II (1849), 28-29.

³ *Man and Nature; or Physical Geography as Modified by Human Action*. London.

California is still in reasonably good condition as to physical resource. On the debit side we can cite the advanced destruction of redwood stands which are not able to restock, the brief expectation of life of our oil fields, the abandonment of unnumbered hillside farms in the Coast Ranges and Sierras, the worn soils of the old barley and wheat districts on the west side of the Great Valley, and the general heavy loss of soil through overpasturing in hill lands. An excursion through the dairy country of Marin County, for instance, will show in almost every pasture serious evidences of soil stripping. Fortunately our primary agricultural resource lies in broad, smooth valleys that can not wash away, and the safety of the mountain forest lands is assured in large measure by the great extent of public forest land. California has sufficiently serious problems of conservation, but they are not life and death matters as is the case in many states and they can be solved without desperate expedients.

The overdraft on the young colonial lands has serious implications for the older regions of the North Atlantic. These depend on a flow of raw materials which probably can not be maintained indefinitely. They doubled their population in this period of extractive commerce. Their own balanced agriculture is balanced only because intensive animal husbandry is made possible by the supply of overseas feedstuffs such as bran, meal, and oil cake, and of commercial fertilizer, which imply continued extraction of resources overseas. The whole occidental commercial system looks like a house of cards.

Some of the losses which the world has thus sustained are the following:

- 1) The extinction of species and varietal forms. The extinction of large predators and grazing animals may perhaps be checked off as failure to survive in environments altered by economic needs. This does not apply, however, to a long list of other animals. The seas and their margins have been wantonly devastated of many mammals and birds without compensating substitutions. The killing off of our sea otter, for instance, has simply removed from our coasts the most valuable of all fur-bearing animals, whose presence would not diminish in the least any fishing or other marine activity of man.

The removal of species, moreover, reduces the possible future range of utility of organic evolution. This may be illustrated by the domesticated plants. Primitive plant breeders developed a very wide range of useful plant forms from a great number of wild ancestors. Our commercial plants are only a small fraction of the primitive domesticated species and varieties. Commercial corn growing, for instance, utilizes only two subspecies of maize and of them only a small part of the range of genes that have been fixed by primitive plant breeding. Yet the qualities on which we have standardized for present-day commercial corn growing may not be the same that will be desired a century from now.

Meanwhile, the extension of commercial agriculture is causing a rapid extinction of the primitive domestic forms. Many species and far more numerous genetically fixed varieties have been lost irrevocably in late years. Of the great varietal range of upland cotton only a very few enter into the commercial forms. The extension of cotton in the United States, Egypt, and India has resulted in its disappearance over much of its primitive area of cultivation in Mexico and Central America, where the full range of varietal forms was developed. Yet these primitive forms hold by far the greater range of plant breeding possibilities for future, as yet unrecognized needs. Some years ago we secured from southern Mexico seeds of a type of cotton, called *Acala*, which made possible the current development of cotton-growing in the San Joaquin Valley. Had the plant explorer missed this particular spot in the State of Chiapas or come a few years later, we might not have a successful cotton industry in California. No one knows how many domestic varieties of cotton survive or have been lost.

In the case of most domesticated plants and animals the greatest range of genes lies in non-commercial varieties. Until the late extension of commercial production the age-long tendency of the native husbandry was to continue and expand this range. Primitive husbandry was engaged in enlarging steadily the evolutionary process. Commercial production has caused and is causing a steady and great shrinkage of forms, because suddenly restricted standards of utility are introduced. Unfortunately, immediate and prospective util-

ity may be very different things. This applies equally in criticism of the effect of our commercial civilization on wild and on domesticated forms of life; in both cases we have drastically impoverished the results of biologic evolution.

2) The restriction of useful species. Often we have effected local rather than total extermination. There are still fur seals of one species on the Pribilof Islands, but we know no means of repopulating the many island rookeries from which they are gone. The eastern white pine is not extinct in the Great Lakes, but it has been removed entirely from large areas where it once flourished. Its reestablishment may involve uneconomic costs of seeding or planting, or may be economically impossible because their place has been taken by inferior species that filled in the cut-over pine lands. Also ecologic associations, once seriously disturbed, may be very difficult or impossible to reestablish. Overgrazing has caused sagebrush to increase hugely in the cooler steppes of the west, and the equally unpalatable yucca and sotol on the hot steppes of the Southwest. If overgrazing were stopped at once on such lands, an indefinitely long time would still be required for the grass to replace the useless brush even if no damage to the soil has been involved. Ecologic successions often are very slow and once a degenerative plant succession has set in a restoration is very uncertain. Fires, for instance, may reduce for a long period of years the utility of a site, by altering soil quality.

3) Soil destruction is the most widespread and most serious debit to be entered against colonial commercial exploitation. Only a brief statement is made of this dreadful problem, for which there is never an easy solution, and often none at all. Under natural conditions—given a specific climate, vegetation, relief, and rock structure—there will be a characteristic soil as to depth and profile for any given position on a slope. Soil and slope are in genetic relationship. Neither is static. Both naturally are changing very slowly. In the majority of cases the slope gradually grows less and the soil on it weathers more deeply, because it forms a bit more rapidly than it is removed at the surface. Soil formation and removal are either balanced, or formation exceeds removal, or, more rarely, removal exceeds formation. Soils develop

slowly by weathering. The mechanically comminuted rock flour of our glacial lands has acquired approximately optimum characteristics in the course of about 25,000 years. This does not involve weathering that starts from solid rock but from the crushed materials of the glacial mill.

The Old World peasant agriculture, by placing animal products first, has maintained a condition of the soil in which cover crops and animal manuring have kept the soil profiles reasonably intact. Parts of our Northeast show similar maintenance of natural balance by culture.

Prevalently, however, we have not provided in our cropping systems any means for maintaining an adequate absorptive cover on the soil, as has the general farming-animal husbandry of northwest Europe and the northeastern United States. Row crops and bare fields in the off season have resulted in the diminution of absorptive organic matter in the soil. The surface has been exposed to the sluicing action of rains. Film after film is stripped by rain, diminishing steadily the depth of the top soil, which is normally the most productive and most absorptive part of the soil, in some soils the only part that is fertile. Full soil sections are almost impossible to find in many parts of the South. The red color of southern uplands and of their streams is derived from the subsoil which is now widely exposed at the surface. Southern farming in large measure is farming of the subsoil, made to yield crops only by liberal dosages of commercial fertilizer. The Ohio and Mississippi are becoming yellow rivers, which indicates that the yellow subsoils of that part of the country are now widely exposed. It is in the gradual and too commonly unnoticed loss of the true soil that the greatest damage is effected. The product of uncounted centuries of weathering and soil development is removed by a few decades of farming. The much publicized destruction of land by gullies is only the final dramatic removal of the surface. The major and irreparable damage is done beforehand.

This loss of the soil horizon by rain wash is not confined to steep slopes, nor is it even most characteristic of the hillier lands. It has reduced many gentle uplands of Piedmont and Coast Plain to briar-grown pastures. It has destroyed in the main the old Black Belt of Alabama for cotton growing, with

minimal slopes, many of less than one degree. It is invading the Black Prairies of Texas and has made amazing headway in the past ten years on the smooth plains of central Oklahoma. All that is needed is a slope sufficient for muddy water to run. Even the great Corn Belt is becoming very badly frayed about the edges. The once rich counties of northwestern Missouri have been reduced to widespread distress. Serious damage is claimed for one-fourth of the area of Iowa.

Wind erosion is not bound to slope at all; it operates best in fact on level land. The baring by plow of the dry margins of our farming land has there resulted in rapidly accelerated wind transport whenever there is a marked dry spell.

These losses are in many cases irreparable. Engineering devices are in the main palliatives that reduce rate of loss, but which under extreme weather conditions may increase the risk. The saving of worn land requires more labor, more skill, and more capital than the farming of good land, and then is of uncertain results. If one could place the best farmers on the worst used land, some headway could be made. The cycle of degeneration is very, very difficult to break, and there is no salvation by any brilliant device.

To this summary review of some of the suicidal qualities of our current commercial economy the retort may be made that these are problems of the physical rather than of the social scientist. But the causative element is economic, only the pathologic processes released or involved are physical. The interaction of physical and social processes illustrates that the social scientist cannot restrict himself to social data alone. We cannot assume, as we are prone to do, an indefinitely elastic power of mind over matter. We are too much impressed by the large achievement of applied science. It suits our thinking to rely on a continuing adequacy on the part of the technician to meet our demands for production of goods. Our ideology is that of an indefinitely expanding universe, for we are the children of frontiersmen. We are prone to think of an ever ample world created for our benefit, by optimistic anthropocentric habits of thinking.

Let us admit for the moment that the supplying of the world with primary goods is simply a matter of the expenditure of energy, and that there is no lack of energy and no loss

thereof. Even this optimistic assumption encounters the difficulty of the geography of population. The two billion inhabitants of the world have a very unequally localized distribution. It is going to be bitterly hard to arrest the declining capacity of many well populated areas, as for instance our Old South. It is going to be difficult to find the means of shifting large numbers of people from crisis areas into areas of opportunity. Our Resettlement Administration has no trouble in discovering crisis areas, but it had slight success in finding areas that were ready to receive immigrants in number. The current national attitudes toward foreign immigration (witness Canada, Australia, Latin America) proceed in large part from a lately hardened conclusion that the resident populations are adequate to make use of the national opportunities. This attitude has become well-nigh world wide. Decline in productivity is becoming characteristic of larger and larger areas. The generalization that the total productivity of the world might be maintained or raised gives no comfort to increasingly large numbers of people who are trapped in lands of fading economic resource. India may be suggested as an example, on a huge scale, of a country in which occidental political economy stimulated population growth and in which an overdraft on land resources will develop a major population crisis. What is to be done about such specific maldistributions?

Let us accept once more the view that the physical scientist will be able to make the requisite syntheses of matter to provide laboratory-made substitutes for the exhausted natural resources. There still remains the problem of the cost of distribution imposed by the geography of land and sea and climate. Freight must continue to be hauled and costs incurred in the movement of goods. The dream of the growth of staggeringly great laboratories to give us synthetic products will involve also great changes in comparative advantage of location. If we appeal to the sun for our salvation, we must build our visionary factories in deserts, along mountain fronts, and in great tidal bays, that fail to coincide with present distributions of dense and advanced populations, and which introduce additional charges in transport of power and goods.

The easy denial of our dilemma by referring it to the technologist is in large measure wishful thinking. It derives mainly from the successful, but relatively easy experience in syntheses of hydrocarbons. We expect a lot from the laboratory technician when we ask him to supply the great range of bio-chemical compounds, for which we are recklessly destroying the natural plant and animal laboratories, or even if we only expect him to come near meeting their cost of production from natural sources. But we demand a good deal more. Actually, we ask that chemistry become alchemy, that it achieve the transmutation of elements. The classical but far from singular illustration of this is the problem of the phosphates. Phosphorus is well known to be a very minor constituent of the earth's crust, too rare as a primary mineral to be recoverable in quantity. The loss of accumulated and available phosphorus from soils by destructive cropping is enormous and forms one of our most acute problems. We are getting along by cleaning up the last of the guano deposits, which have been under exploitation for a century, and by using up the secondary mineral phosphates. The latter are highly localized fossil accumulations in certain ancient marine graveyards. These are pretty well known as to occurrence, and the reserves are not large. What then? The question, sharply asked by Cyril Hopkins, as to how civilization will survive the dissipation of this element critical to animal life, remains unanswered.

The doctrine of a passing frontier of nature replaced by a permanently and sufficiently expanding frontier of technology is a contemporary and characteristic expression of occidental culture—itself an historical geographic product. This "frontier" attitude has the recklessness of an optimism that has become habitual, but which is residual from the brave days when north European freebooters overran the world and put it under tribute. We have not yet learned the difference between yield and loot. We do not like to be economic realists.

INTENSITY AND LAND RENT

AN OVERLOOKED ASPECT OF RENT THEORY

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WRITERS of recent textbooks in beginning economics have been prone to imply that rent reflects the intensity of land use. The accepted scheme of the relationship of land rent to intensity is illustrated in figure 1 in which there is a symmetrical rise (or fall) in the intensity of the application of labor and capital to varying grades of land; the highest grade being in all instances that which is most

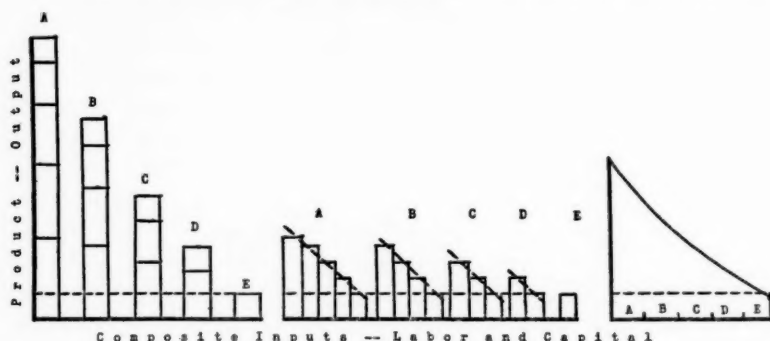


FIG. 1. TYPICAL DIAGRAMS ILLUSTRATING THE RELATIONSHIP OF INTENSITY AND RENT

intensively used. In general the assumption of such a relationship is valid, and there is more than a superficial substantiation of their contention to be found in every American city where the graded heights of skyscrapers bear a superficial resemblance to the charts used for illustration.

However, in many instances this assumption is in error and the error arises, as have so many in economics, because of the too free use of that reasoning device *cet. par.*, or other things equal. In this case the fault has been that land char-

¹ The writer is extremely grateful to John H. Dickerson for his critical aid in the preparation of this paper. Others who have contributed materially are R. J. Silkett, A. H. Mussman, and Alva M. Meyers, Jr.

acter has been regarded as uniform. It is correct to assume that as demand rises additional labor and capital are used at both intensive and extensive margins. Thus it is easy to understand why authors have so uniformly proceeded to the questionable conclusion that good lands are all used more intensively than poor lands. They have persistently reasoned as though the behavior of land in the production process was much more uniform and simple than it is in actual practice.

The Meaning of Intensity

Most authors are in agreement regarding the meaning they wish the term intensity to have. The more intensively used lands are those upon which the greater amounts of labor and capital are used or applied. Such a connotation is clearly in harmony with the customary discussion which links intensity with the law of diminishing returns and the two margins of cultivation; the intensive and the extensive. Bye defines these margins excellently, saying:

"The poorest land in use is commonly known in economics as marginal land. It is also called the extensive margin of cultivation, because it marks the outer fringe beyond which land is not utilized. . . . On each of the lands above the extensive margin there is some intensive utilization. Intensive utilization takes place on them because in each case just as great a value-product can be obtained by applying more labor and instruments to the higher grade lands as by carrying cultivation extensively to poorer grade lands. So when the extensive margin of cultivation is reached, there is also reached on the better lands an intensive margin which may be defined as that point in the utilization of any piece of land where the least productive unit of labor and capital is applied."²

While the intended meaning is clear, the actual use of the term intensity more often than not offends its definition. The common usage connotes a necessary and causal relationship between intensity and productivity or rent and implies that better lands are uniformly used more intensively than poorer lands.

Ely for instance calls attention to the *fact* that larger quantities of capital and labor are used upon the higher

² *Principles of Economics*, Alfred A. Knopf Co., N. Y., 1924, pp. 397-399.

grades of land,³ and Fairchild, Furniss and Buck refer to the fact that the great differences in original and native fertility have like effects on the relative intensity of cultivation.⁴ One author of a rather recent bulletin goes even further when he says "The intensity of use of a soil is probably a better indication of its economic value than are the yield of crops."⁵ This author also illustrates the extremity to which the meaning of intensity can be carried when he lists in a diagram of "Factors Related to the Intensity of Use to Which Land is Adapted" such things as (1) quality of products (2) percentage of farms occupied by tenants (3) amount of taxes paid (4) size of schools (5) safety of mortgage loans (6) safety of fire insurance policies (7) ability to pay for rural electrification and so on.⁶ In this case also, an important and useful system of land classification is based flatly upon the presumption that differences in intensity of use reflect grades or classes of land directly.

Not only, therefore, is the term intensity used in a manner out of harmony with its context but there is apparent in the foregoing references a tendency to broaden its use quite out of proportion to the true connotations of the term. A clarification of its meaning is therefore most certainly needed. The tendency has been to identify intensity with productivity. That such identification is erroneous it is the purpose of this article to make clear. Attention in the remainder of the paper will be fixed upon agricultural lands only.

*Intensity (Alone) Does Not Reflect Rent Nor
Correlate Closely With the
Grade of Land*

There is to be found much statistical evidence that intensity of use reflects but poorly the grade of farm land if we

³ Ely, R. T., *Outlines of Economics*, 4th Revised Edition, Macmillan Co., N. Y., 1929, p. 408.

⁴ *Elementary Economics*, Macmillan Co., N. Y., 1926; see p. 119. For other writers who relate intensity to rent in much the manner see Bye, R. T., *Principles of Economics*, ch. 19; Garver and Hansen, *Principles of Economics*, 1928 Edition, ch. XXVI; Dummer and Heflebower, *Economics with Application to Agriculture*, ch. XVII.

⁵ Lewis, A. B., *An Economic Study of Land Utilization in Tompkins County*, New York, Cornell University Agricultural Experiment Station Bulletin No. 590, p. 10.

⁶ *Ibid.*

accept as a measure of its quality the value per acre or the fertility of soil. Thus, in the United States the higher grades of farm land have by no means the most labor applied to them as is illustrated in table 1.

The quality of land in the five states chosen for illustrative purposes is represented by (1) the average value per acre of farm land as reported in the 1935 Census of Agriculture and (2) by the percentage of distribution of acreages of high and low grade lands as presented in the 1934 report of the National Resources Board.⁷ Five classes or grades of land are provided for in this inventory with Grade 1 the highest in productivity and Grade 5 the lowest.

TABLE 1. LABOR INTENSITY AND QUALITY OF LAND IN FIVE AGRICULTURAL STATES OF CENTRAL UNITED STATES

	Number of Farms*	Farm Population*	Average Value of Land Per Acre*	Percentage Distribution of Grades of Land**					Land Area* (acres)
				I	II	III	IV	V	
Iowa	221,986	967,979	\$71.66	72.9	19.4	3.9	2.8	1.0	35,575,000
Illinois	231,312	1,017,650	69.67	41.7	19.3	17.6	18.7	2.7	35,868,000
Missouri	278,454	1,183,499	31.36	19.7	31.4	28.0	9.7	11.2	43,985,000
Kentucky	278,298	1,307,816	29.97	3.4	19.6	34.9	30.8	11.3	25,716,000
Tennessee	273,783	1,308,420	29.12	3.4	17.9	34.9	30.9	12.9	26,680,000

* From Volume 1, U. S. Census of Agriculture, for 1935.

** Arranged from data of table 7, p. 127, National Resources Board Report, December, 1934.

Among the five states in the table, farm population and the number of farms are the smallest in Iowa. In this same State farm land values are highest and the relative acreages of high grade farm land (Grade 1 and 2) far overshadow the acreage in any of the other four states. By contrast where land values are lower and land poorer, as in Tennessee, the farm population, number of farms and the number of days worked are far greater. Industrial opportunities and the percentage of part-time farming varies somewhat from state to state. Tennessee farmers work at jobs other than farming somewhat more than do Iowa farmers. The difference is, however, relatively insignificant. That is, Iowa farmers

⁷ See page 127.

worked at occupations other than farming approximately two per cent as many days as they worked at farming and Tennessee farmers about 3.3 per cent. On the other hand, Tennessee farm population was 35 per cent greater than the Iowa farm population during that same year.

Farm population and labor intensities in these states, therefore, clearly do not accord with the presumption that intensity reflects rents. Farm population is smallest in Iowa where lands are most valuable and greatest in Tennessee where its value is lowest. Furthermore these differences in farm population do not result because Tennessee is larger than Iowa for, in actual fact, the size relationships are just the other way around. The area of Iowa is 35,575,000 acres while that of Tennessee is approximately 9 million acres less.

TABLE 2. MEASURES OF INTENSITY OF LAND USE FOR LANDS OF VARYING QUALITY IN MISSOURI

Class of Land	Value per 100,000 pounds of Surface Soil Nitrogen of				Expenditures per 100,000 lbs. of Sur- face Soil Nitrogen	Male Farm Workers 10 yrs. of age & over per 100,000 lbs. of Surface Soil Nitrogen
	Dwell- ings	Service Build- ings	Machinery and Draft Animals	Livestock except work stock		
Percentage						
Class I	100.0	100.0	100.0	100.0	100.0	100.0
Class II	97.3	85.9	90.2	87.4	68.9	115.4
Class III	111.5	103.1	1109.1	91.1	63.0	183.0

Intensity is not a matter of labor and population alone, however, and differences in capital employed per acre might, conceivably compensate for these differences in labor intensity. There are some profound difficulties in the way of arriving at exact measures of combined labor and capital intensity and the author has made no attempt to provide such a combination figure for the five states used in table 1. However, in an article previously published this author⁸ arranged the table which is given here as table 2. This table

⁸ JOURNAL OF FARM ECONOMICS, Vol. XVII, August 1935, "Intensity of Land Use and the Resettlement Problem in Missouri," by Conrad Hammar and Mr. J. H. Muntzel.

provides measures of both fixed and operating capital and labor intensity for three grades of land in Missouri.⁹

Surface soil nitrogen content was used as a means of distinguishing qualities of land so as to provide a base for measuring differences of intensity on the three grades of land, for a number of reasons. First, surface soil nitrogen is a good, though not perfect index of farm land values and productivity.¹⁰ Second, the use of nitrogen permits the inclusion of all of the various categories of land within the farm upon an essentially uniform basis. That is crop land, pasture land and even timber land may be summed up directly in one single measure or index of productivity. Third, the nitrogen content of soil is in some respects superior to value as an index of the quality of land (1) because it is unaffected by differences in taxes though these materially affect values and (2) because it is equally unaffected by differences in capitalization rates which also profoundly affect values.

It is notable that the number of male workers 10 years of age and over per 100,000 pounds of surface soil nitrogen is much greater on Class III lands and appreciably greater on Class II lands than upon the higher grade Class I lands. These data substantiate the implication of table I, that is that in certain situations labor intensity may be greater on poor than upon good lands. Furthermore, of the five measures of capital intensity, three indicate greater intensity of application upon Class III than upon Class I lands and four of the five indicate great intensity upon the Class III lands than upon Class II lands. In fact only for the commonly unimportant or only moderately important circulating capital as measured by expenditures, does the capital intensity vary in a manner strictly in accordance with the traditional idea

⁹ The counties representing the three grades were selected so as to provide a wide range in land productivity and at the same time to escape as far as possible urban influence. The type of farming varies somewhat from Class to Class but general farming dominates. The Class I counties of highest quality land include Atchison, Andrew, Caldwell, Clinton, Holt and Nodaway. Class II counties include Audrain, Cooper, Henry, Mercer, St. Clair and Shelby. Class III counties include Bollinger, Franklin, Gasconade, Osage, and St. Genevieve. The acreage of land in all three groups of counties is large though somewhat larger for the Class I than Class III counties.

¹⁰ See the author's bulletin, *Factors Affecting Farm Land Values in Missouri*, Missouri Agricultural Experiment Station Research Bulletin No. 229, pp. 28-33.

that intensity reflects rents. A comparison of the Class III with the Class I lands leads one to conclude that, if anything, the Class III lands were used even more intensively than the Class I lands. Perhaps it should be mentioned also, that a statewide analysis of the settlement of lands made as a part of the same study shows that, in Missouri, the poorer lands have been settled much more densely than the better lands.

Certain objections may be raised to the use of these data as accurately reflecting degrees of intensity. First, no measurement of management applications has been provided. Indeed, none is available. If management is roughly proportionate to population, as may be the case, the intensity of management, too, is greater on the poorer lands. Second, types of farming affect intensity and, as noted in the article quoted, may be particularly important in considering intensities in regions of self sufficing as contrasted to regions of commercialized farming. The article states "... those who work in mills and packing houses contribute far more to the farming of excellent land areas with a large quantity of products to market than they do to the farming of areas which have lesser marketable surpluses and who supplement their labor in the fields with a large amount of labor directed to the preparation of commodities for home consumption."¹¹ A scrutiny of the types of farming does bring out the fact that the proportion of self sufficing farms tends to be somewhat greater in areas of poor land. These objections, do not appear, however, to outweigh the evidence in the tables above that lands of high value are not necessarily nor even commonly used more intensively than lands of lower value or fertility.

Intensity Need Not Reflect Productivity

The element of error that has crept into the writings of these later economists has been one of using the term intensity as though it could substitute somewhat indiscriminately for its companion term productivity. In actual fact, however, intensity is only one arm of productivity and there is no simple nexus joining the two.

¹¹ *Op. cit.*, p. 419.

As noted by Taylor¹² and later by Black¹² and others, productivity has two dimensions. These are capacity and efficiency. Capacity is defined by these writers as the ability to absorb, to combine or associate with, or to use advantageously. Efficiency refers to the ratio of input to output. For economic analysis both are most satisfactorily measured at highest profit combination. Since farming is organized upon a multiple unit basis, and is highly competitive, one may presume that farms generally are operated at highest profit combination or as near thereto as their operator's sagacity permits. The word "capacity" in subsequent portions of this paper is used to designate economic capacity rather than mere physical capacity.

In order for a combination of factors to be productive there must be a degree of efficiency associated with the capacity of the agents one for another, that is: given any degree of capacity with zero efficiency, productivity is zero. Likewise no degree of efficiency can be productive alone.

In many cases high degrees of capacity and efficiency of land are associated one with the other and only when like degrees of each are so associated, will intensity bear any simple positive relationship to rent. Lands with a low efficiency, even if intensively used will yield low rents. Likewise lands of high efficiency even if used with a notable lack of intensity will yield high rents.

Indeed, it is these facts, apparently undiscerned and certainly undifferentiated by the writers referred to at the outset of this article, that apparently explain in considerable degree the reason why such data as have been assembled in the tables above are persistently encountered in modern research in land economics. The author does not mean to imply however, that a large number of institutional factors may not have played a considerable role in bringing about a maldistribution between population and resources. The ideas here presented should, however, aid in explaining why large variations in intensity of land use so persistently appear, and furnish, in part an explanation of the basis for the variation.

¹² Taylor, H. C., *Agricultural Economics*, Macmillan Co., 1919, ch. 12; Black, J. D., *Production Economics*, Henry Holt Co., New York, 1926, ch. 13. However, see also Peterson, George M., *Diminishing Returns and Planned Economy*, Ronald Press, New York, pp. 61-64.

*Capacity and Efficiency as Independent Aspects
of Land Character*

Evidences that lands do have varying capacities and efficiencies are numerous. They are, it is hoped, sufficiently apparent to need no extended statistical verification or substantiation. Dependence for support of the contentions of this paper will be upon certain examples of wide divergence in respect to these two characteristics of land use.

Low value lands may occasionally have high capacity. Reference is, for instance, sometimes made to very low value sandy lands in New Jersey said to be used with great intensity. Whether or not the reference is accurate it appears possible to predicate the intensive use of such lands for vegetable and truck production. New York provides a nearby consuming market. It is known that a great area of such lands are available in New Jersey and that they are low in value. They provide almost no fertility, being nearly pure siliceous sands. The intensity of their use occurs because with abundant fertilizer and sufficient labor, they can be made to produce large truck crops. The effectiveness of both the fertilizer and the labor would be dissipated if they were applied over large acreages: hence the intensity of application.

In a contrary situation some of the highest valued¹³ agricultural lands in the world are in New Zealand and are apparently used at rather modest levels of intensity. They are lands of great fertility. The climate is mild and rainfall ample. The land is, however, located at great distance from market and is used chiefly as grass land for the production of milk. The mild climate makes unnecessary the construction of elaborate housing for the cattle and the use of the land for grass makes it unnecessary to use any considerable amounts of labor per acre. The grazing season extends over most of the year. The major items of capital application are the cows themselves and only a moderate number of cattle are needed to consume the grass and convert it into milk. There is, in other words, no particular reason for a high

¹³ Belshaw, in an article on "Mortgage Adjustment in New Zealand" in the *JOURNAL OF FARM ECONOMICS*, August, 1935, states, relevantly, "Relative values on the better class lands reach levels which astound observers from overseas." See p. 571.

degree of intensity in the application of either capital or labor. The land gets its value from its great efficiency rather than from any remarkable feature of its capacity.

An illustration of a similar situation can be drawn from much nearer home. One of the prominent belts of land use surrounding cities during the period when horsepower was employed almost exclusively for draying purposes was the so called "hay belt." Hay is a bulky commodity, and it is expensive to ship. There was, or is, therefore, much advantage in growing it close to market, and the hay belt was therefore "close in." On the other hand hay is neither a labor nor capital intensive crop. Yet its production was able to displace very much more intensive forms of land use and to compete effectively with them for the opportunity to occupy land. Its major competitive advantage was the efficient rather than the intensive way it used the land.

Perhaps the preceding illustrations have appeared exotic. They were chosen for the wide differences in capacity and efficiency of land that they illustrate. Examples much nearer home are easily available. In Minnesota and Iowa it is not the highly valued, fertile and efficient lands in the southwestern and northwestern parts of the two respective states that are the most intensively used. As type-of-farming area and soils maps of the two states reveal, the most fertile soils in both states are used for meat or cash grain production, both rather extensive types of land use. On the other hand, in both states, the dairy areas, in which the intensity of land use is relatively high, are located on the definitely poorer lands in eastern Minnesota and northeastern Iowa.

In Illinois great areas of the most fertile soils in the state are used for the production of cash grain in a manner that can hardly be called intensive. Values of land in these cash grain producing areas are high because the land is efficient, rather than because it has great capacity; in actual practice, it is efficient in using other agents of production in combination. Rents are high despite comparatively unintensive use.

In case after case, instances of which may be found in any state of the Union, there are to be found illustrations of the fact that fertile land and efficient lands are often used much less intensively than the less fertile land of greater empirical

capacity. One may in fact generalize broadly to the effect that intensity correlates only incidentally and perhaps accidentally with rent and the grade of agricultural land.

However, in any particular area the efficiency of various grades of land may remain so nearly constant that variations in capacity and, hence, in the intensity of use may reflect with reasonable accuracy differences in grades of land. Such appears to have been the case in Tompkins County where the justly celebrated New York system of land classification was initiated. Any attempt to use the method of grading land on the basis of intensity over large areas, is, however, sure to come to grief unless, indeed, in actual practice allowance is made for varying efficiencies.

The Bases for Differing Capacities of Land

Lands have differing capacities and efficiencies because of their differing behavior in production. These differences are most accurately observed by noting the differing shapes of composite cost curves or the varying relationships of input and output with changing applications of labor and capital. The general fact that curves of diminishing returns (of whatever kind) differ widely needs no substantiation. Their remarkable character is their lack of uniformity. No two soils are quite alike in their ability to produce with varying amounts of seed and fertilizer just as no two cows are identical in their capacity and efficiency of feed utilization.

In figure 2 three curves are employed to characterize as many situations in the relationship of intensity to rents and the grade of land. Each curve represents the application of uniform units of labor and capital to different types or classes of land. To follow traditional economic analysis the line BC is used to represent the necessary return to labor and capital and the triangles CEF, CEG, and CEH to represent rent.

Curve I illustrates productivity (marginal) and rent upon lands of high capacity but very low efficiency; a situation presumably approached upon the New Jersey sand flats. As efficiency approaches zero (that is as line FC approaches coincidence with line EC) rents, too, approach zero. Such a condition (of zero rents) would be reached in the New Jersey illustration if the prices of vegetables or truck crops were

just high enough to remunerate the labor and capital needed to produce them and leave nothing for land. Even under conditions of essentially zero rent, however, the intensity of use could be considerable.

Curve II represents land with great efficiency but low capacity. The rent of such land may be great just as land values in New Zealand are high. The marginal product of such land is no greater than the marginal product in the preceding

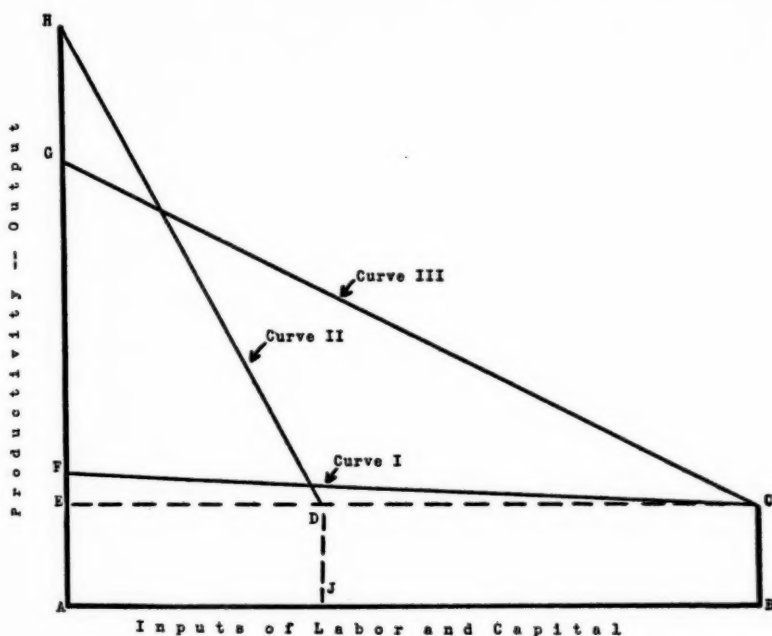


FIG. 2. HYPOTHETICAL CURVES OF MARGINAL PRODUCTIVITY OF THREE TYPES OF LAND

instance. The lack of capacity of such land is as effective a bar to still higher rents as is the lack of efficiency of the sandy lands just mentioned. Capacity, too can and does approach zero. Some lands, for instance, produce timber with practically no labor or capital or at practically no cost (have no capacity) but produce so little that they remain quite worthless.

Curve III represents rent where both capacity and effi-

ciency are high. There are many areas of such lands. Muck lands used for truck gardening near cities are notoriously of this kind. Their tremendous per acre values reflect their high productivity.

When one views the reasons for differences in capacity and efficiency more proximately they appear in a somewhat different and perhaps more realistic light. Other things equal lands are used less intensively when they supply within themselves a relatively larger number of the ingredients needed for production. Lands of high fertility need no fertilizer. Level lands need no terracing. Well watered lands need no irrigation. Lands upon which no water accumulates and which are not soggy internally need no drainage. That is, certain conditions of or in some lands, act as a substitute for labor and capital and this fact reduces the need for intensive handling of them. Often indeed the characteristics that give land a high efficiency appear to reduce the need for intensive utilization.

On the other hand some lands are tolerant of an intensive use or to great applications of labor and capital. Lands of low fertility but with a good structure will often make effective use of large amounts of fertilizer. Fertile lands with steep topography will pay the cost of terracing. Cotton lands generally appear to have a great capacity for the use of unskilled labor. Lands suited to the productivity of truck crops and to the raising of potatoes appear to have large capacities for absorbing labor and capital in use. Certain defects of land appear to increase its capacity rather than the other way around. Lands derived from volcanic ash are said to be very heavy to plow because of the firm interlocking of the sharp and irregular soil particles. The difficulties in connection with keeping out sprouts and tree seedlings is a serious bar to the use of certain Missouri lands for pasture and this growth forces relatively intensive cultivation of the lands if they are to be continued in farming use. That is trees, which can be kept out easily when the fields are plowed, capture pastures quickly.

The type of farming to which land is adapted has a strong influence upon its capacity to use advantageously other

agents of production. Land suited to a handicraft agriculture is likely, for instance, to be used with great labor intensity. Cotton lands are notoriously of such type but so also are lands suited to small fruit, truck or vegetable crop production, hop raising, and so on. Dairying, too, makes a relatively large use of labor, and is intensive in comparison with meat or grain production. On the other hand, lands that will produce heavy crops of grass with little or no attention have little capacity to use large amounts of either labor or capital. Such are the areas in New Zealand referred to previously.

Lands used for cereal grain production provide numerous instances of areas of high value lands of low capacity. Cereal crops do not require much hand labor. Production of grain has become highly mechanized and the machines are efficient and not particularly expensive upon a per acre basis. Buildings needed upon grain farms need not be expensive and it is a relatively easy matter to manage large acreages of such land since the treatment of each acre is so consistently uniform.

Similarly the management complement of land, that is its capacity to absorb management, varies greatly. Efficient land, other things equal, needs less management than inefficient land. Land with soil having serious textural or structural defects, lands with an unbalanced fertility complex, lands upon which erosion is a constant menace, lands with an associated climate of the hazardous type, are more difficult to manage than those not so affected. It is probable, therefore, that Tennessee lands get more instead of less management than Iowa lands rather than the other way around as is so commonly supposed, not to say presumed.

In Missouri and the United States generally much poor land is not only inefficient but has at the same time (and partly because of its inefficiency) a high capacity to absorb labor and management. This fact or these facts go a great distance in explaining the persistence of small farms in poor land areas. They explain about as well why large farms and high land values may be more often associated than not, despite the insistent implications to the contrary encountered in practically all elementary college economics texts.

Application in Fields of Land Use Policy

The confusion of intensity and productivity is by no means merely an interesting sidelight on academic economic theory without application to practical affairs. The traditional coupling of the two in economic texts together with the known fact that poor lands are often densely settled has led to a widespread conviction among economists that good land (meaning, usually, efficient land) is altogether too thinly settled. This conviction in the hands of land planners and resettlers has been carried over into the drafting of policies calling for the depopulation of poor land areas and the closer settling of areas of superior land. By no means have all efforts in the direction of adjusted settlement been lost motion. Some of them, however, reflect an uncritical acceptance of early economic training.

In a county in west central Missouri there is located a resettlement project now in the hands of the Farm Security Administration, an accomplishment of which has been to break up a number of 160- and 240-acre farms into 80-acre tracts upon each of which some settler is being relocated. The average size of farm in the county in 1935 was 145.3 acres and the average in the three townships in which the project is located was (in 1930) much larger or 165.3 acres. The drift in size of farms over the last quarter century has been in no particular direction in the county in question though farms were 3.3 acres larger on the average in 1935 than in 1910. The size of the farm in the county had in other words attained a certain stability. The type of farming also in the area was rather stable, and was the result, of course, of years of local farm experience. Under these circumstances the soundness of the economics behind the creation of these new 80-acre units seems, to say the least, open to serious question. The operators of these small farms unless they obtain supplementary employment, are sure to find themselves in a dilemma. They will (1) either adopt a type of farming foreign to the area, that is, one that others with longer experience have not found most profitable, or (2) if they adopt a type of farming normal to the area, are sure to have to use their labor and capital to distinctly uneconomic degrees. In either circumstance the paying for the unit is likely to be difficult.

More crucial, however, is the probability that such resettlement projects will fall apart as soon as governmental strings on the sale of real estate are relaxed. For, if these newly established units are indeed inefficient, the land will in time be sold to other operators in the surrounding territory who will consolidate them into larger units in order that the reduction of costs can be realized.

Other resettlement projects, particularly if they were planned and directed with the now traditional and entrenched ideas regarding uneconomic settlement are almost almost certain to have made similar mistakes. Indeed a survey of "areas suited to closer settlement" in certain State Land Use Planning Reports confirms one in the conviction that many similar mistakes are in prospect unless the distinction between capacity and efficiency of lands is more generally understood by the land planners of the future. The universal tendency seems to have been to designate high quality efficient lands that are and should be in large farms, as areas in which the size of farms should be reduced in order to make room for more dense settlement. In actual fact, modern developments in machinery being what they are, there is quite as good a possibility that the farms in these efficient land areas should be larger rather than smaller.

PRICE DISCRIMINATION FOR AGRICULTURAL PRODUCTS¹

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TWO articles appearing in recent issues of the JOURNAL OF FARM ECONOMICS² have discussed the possibilities of increasing gross returns to the farmer and yet ensuring increased consumption of agricultural products by lower income groups, by the method of discriminative pricing between low and high income groups. Both writers used hypothetical demand curves to make their points concrete. In the present paper, the use of empirical market data and further explorations into theory throw some additional light on this interesting subject.

The theory may be outlined first. We will present it on three levels of abstractness and simplicity. On the first level, we will deal with demand curves with an average elasticity of unity.³ On the second, we will include demand curves with other elasticities. On both of these levels, we will assume that the elasticities of demand in different markets are equal. On the third level, we will remove this assumption of equal elasticities.

I

Curves with Average Elasticity of Unity

The simplest case is that of a straight line demand curve (on arithmetic paper) with an average elasticity of unity. The elasticity of a curve of this sort is not uniform throughout. It varies from point to point. This is shown in figure 1A, where a straight line curve *A* with an average elasticity of

¹ Journal Paper No. J-585 of the Iowa Agricultural Experiment Station, Ames Iowa. Project No. 518. I wish to express my appreciation of the helpful criticisms offered by Mr. Raymond Jessen, Mr. W. H. Nicholls and Mr. C. Elkinton of the Dept. of Economics, Iowa State College, and by Frederick V. Waugh of the Bureau of Agricultural Economics.

² Waugh, Frederick V., "Market Prorates & Social Welfare," JOURNAL OF FARM ECONOMICS, XX, 403-416 (1938). Stigler, George J., "Social Welfare and Differentiated Prices," same JOURNAL, XX: 573-586 (1938).

³ The term, "average elasticity," means the elasticity of the demand curve taken as a whole. It can be computed conveniently, and with satisfactory accuracy where the demand curve is straight or uniformly curved, by the use of the Marshallian formula, using the vertical and horizontal distances between the ends of the curve as the d 's, the average price as p , and the average quantity consumed as q .

unity is plotted along with several curves, *B*, *C*, *D*, of constant unit elasticity. These constant unit elasticity curves are rectangular hyperbolas, approaching the *x* and *y* axes as asymptotes.

Comparison of the straight line curve *A* with the constant elasticity curves *B*, *C*, *D*, etc., beside it shows that the upper

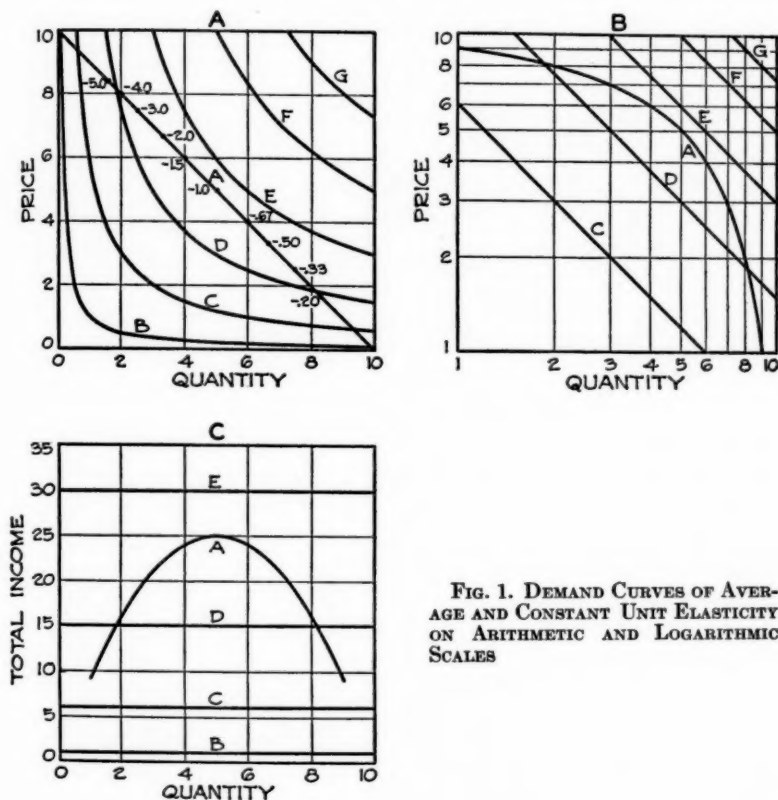


FIG. 1. DEMAND CURVES OF AVERAGE AND CONSTANT UNIT ELASTICITY ON ARITHMETIC AND LOGARITHMIC SCALES

part of the straight line curve is less steeply sloped than the constant unit elasticity curves; that is, it is more elastic than unity. Conversely, the lower part of the straight line curve is less elastic than unity. The elasticity is highest at the upper end and lowest at the lower end; it is higher than unity at the top, decreases to unity at the middle, and gets less and less than unity from there on down. The elasticity at differ-

ent points is shown by the series of figures written beside the line.

The situation can be shown on double logarithmic paper, as in figure 1B. The constant unit elasticity curves, *B*, *C*, *D*, etc., shown in figure 1A become straight lines, with slopes of 45° , on logarithmic paper. The straight line curve *A* on arithmetic paper in figure 1A becomes a curved line, concave to the origin on logarithmic paper in figure 1B.⁴

Total Income

The total income that would be realized from the sale of different quantities of a commodity with a demand curve like curve *A* (a straight line demand curve on arithmetic paper, with an average elasticity of unity) is shown in figure 1C. In this case the maximum gross income is realized from an average crop. Large crops and small crops both bring in less money than average crops. The point of highest total income comes at the point where the elasticity of the demand curve is unity.

The total-income curves derived from constant unit elasticity curves like *B*, *C*, *D*, etc., are horizontal straight lines. If the elasticity is unity at all points, the total income remains constant, whatever the size of the crop, as shown for the curves *B*, *C*, *D*, and *E* in figure 1B.

Convex curves with an average elasticity of unity, but less curved on arithmetic paper than the constant elasticity curves shown in figure 1A, undergo an interesting transformation when plotted on logarithmic paper. Their curvature is reversed. They are convex on arithmetic paper, but they become concave on logarithmic paper. The point of highest total income appears (in their case as in the case of straight line curves on arithmetic paper) at the central point of the curve where the point elasticity is unity.

Convex curves with an average elasticity of unity, but more strongly curved on arithmetic paper than constant elasticity curves, lose some of their curvature when plotted on logarithmic paper. But they retain their convexity. Accordingly, with this kind of curve, the minimum gross in-

⁴ Some writers call this type of curve "convex upwards" rather than "concave to the origin." I have merely chosen to follow Joan Robinson's nomenclature.

come is realized from the sale of an average crop. Large crops and small crops both bring in more money than an average crop. The point where the elasticity of the demand curve is unity is the point of lowest total value.

We may summarize this section in these words: Among commodities whose demand curves have an average elasticity of unity, those whose demand curves are concave on logarithmic paper would benefit from price equalization operations between different markets in time and place. With respect to time, the highest returns would be realized from the sale of an average crop; it would pay to convert a large and a small crop) both of which have a smaller total value than an average crop) into two average crops, by storing the surplus from the big crop and adding it to the small crop. Similar considerations apply with respect to place.⁵

Exactly the opposite conclusion holds for price discrimination, the opposite of price equalization. The only commodities that would benefit from price discrimination, under the conditions laid down in this section, are those whose demand curves are convex on logarithmic paper.⁶

⁵ These statements need appropriate qualifications to take account of storage and shipping changes.

⁶ Joan Robinson in her chapter on price discrimination in the *Economics of Imperfect Competition* takes the position that price discrimination would not pay under any conditions where (as we have assumed in this section) the elasticities of demand in the different markets are equal. See for example her statement on p. 185, "The existence of price discrimination, as we have seen, depends on a difference between the elasticities of the demands in the markets in which it is possible to sell. If the demand curves of the separate markets were iso-elastic, so that at any price the elasticity of demand was the same in each market, then the same price would be charged in all of them; for when the marginal revenues were equal in each market, the prices would then also be equal, and the result would be the same as though the market was not divisible. This would occur, for example, if the demand curves of individual buyers were all identical. One market might contain more buyers than another, so that one demand curve was simply an enlargement of the other. The same result would be produced if the demand curves of individuals were of various shapes, but each market was made up of the same proportions of individual demands of various types. If the only practicable subdivisions of a market were such that the demand curves in each were iso-elastic, there would be no advantage from price discrimination. It might be possible for a village barber to charge a differential price for shaving red-haired clients, but if the red-haired members of the village had the same wealth and the same desire to be shaved as the rest of the inhabitants, the barber would find it profitable to charge them the same price as the rest."

In this discussion, Mrs. Robinson apparently has overlooked the minor additional fact that the barber would find it profitable to charge discriminating prices, not uniform prices, if the demand curves of the different groups were iso-elastic but convex on logarithmic scales.

II

Elasticities Other Than Unity

Demand curves whose elasticity is constant but higher or lower than unity are straight lines on logarithmic scales, like the curves *B*, *C*, *D*, etc., in figure 1B, but their slopes are other than 45° . The slopes of the inelastic curves are steeper than 45° , and those of the elastic curves, flatter than 45° .

The total income curves for these constant but not unit elasticity demand curves are not straight lines like the total income curves for constant unit elasticity curves, merely sloped one way or the other. They are curved lines. The total income curves for constant but less than unit elasticity demand curves are rectangular hyperbolas like the curves of constant elasticity shown earlier in figure 1B. And like those curves, they would be straight lines with a negative slope, on double logarithmic paper. A demand curve with constant elasticity of -0.5 is shown on arithmetic and logarithmic paper, together with the total income curve based upon it, in figure 2.

The total income curves for constant but more than unit elasticity demand curves are also curved, but they are parabolas, with apex at the origin of the x and y axes. They too would be straight lines on double logarithmic paper; but they would have a positive slope. A demand curve with a constant elasticity of -2.0 , and the total income curved based upon it, is shown also in figure 2.⁷

In the final paragraph of the section dealing with demand curves of unit elasticity, we saw that price discrimination would pay only where the demand curves are convex on logarithmic paper. They were the only demand curves that yielded U-shaped total value curves. Straight-line unity demand curves on logarithmic paper, we saw, yielded total value curves that were simply horizontal straight lines, so there would be no gain from price discrimination. And with convex demand curves on logarithmic paper, price discrimination would result in an actual loss.

In the case of curves whose elasticity is other than unity,

⁷ The formula for constant elasticity curves is $qp^n = K$, where q = quantity, p = price, n = elasticity, and K = a constant, Griffith C. Evans. *Mathematical Introduction to Economics*, problem 7, p. 11, 1930.

the conclusion is more complicated. For a constant elasticity curve of say -0.5 , the total returns curve is not a straight line; one may regard it as a very broad U-shaped curve with a general negative slope. Conversely, the total returns curve for a constant elasticity curve of -2.0 is an inverted broad U-shaped curve, with a positive slope.

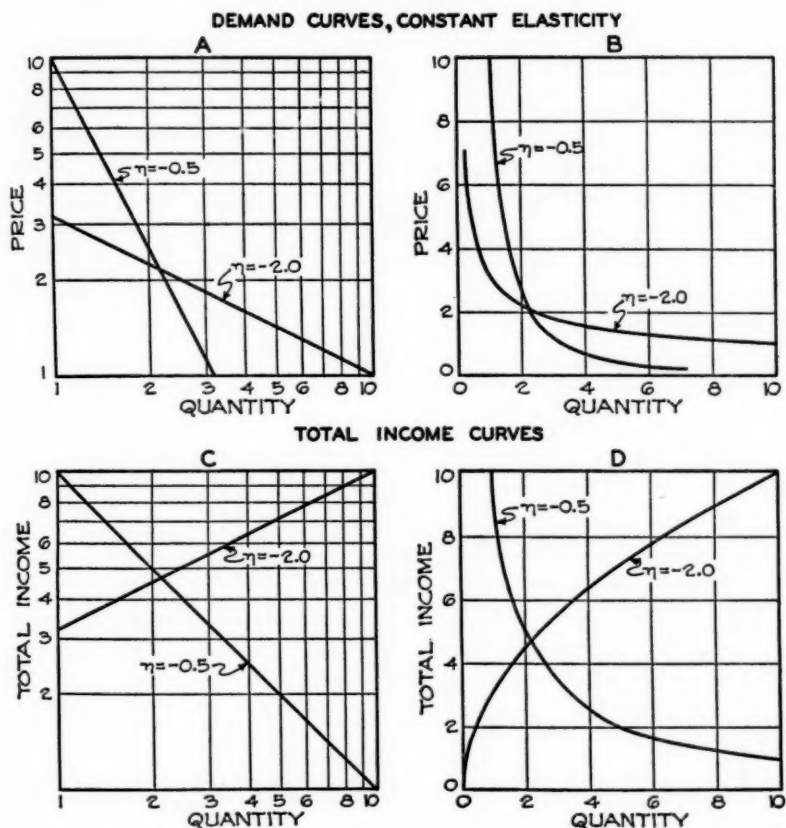


FIG. 2. CONSTANT NON-UNIT ELASTICITY DEMAND AND TOTAL INCOME CURVES ON ARITHMETIC AND LOGARITHMIC SCALES

It is difficult to summarize this section accurately in one sentence. In general terms, one could make the following statement and two qualifications. Statement: Price discrimination pays only when the demand curve is convex on logarithmic paper. Qualification: (1) If the average elasticity of

the demand is less than unity, price discrimination will pay even if the demand curve is slightly concave, the degree of permissible concavity varying with the degree of inelasticity; (2) but if the average elasticity is greater than unity, the converse of (1) holds.

Specific Empirical Demand Curves

Let us now turn for a moment from a statement of the general theory to a consideration of specific facts. There appears to be a general belief that in actual life most demand curves are curved lines, convex to the origin, on arithmetic paper. Practically all of the hypothetical curves found in economic textbooks are thus curved. These convex curves are also common in technical articles; Waugh's curves are of this nature.

These curves are misleading in two respects. Most of them apparently reflect the belief that the demand curve characteristically is more elastic at the lower end of the curve than at the upper end.⁸ This sounds like a reasonable assumption, yet it is incorrect in two respects. (1) Most of the hypothetical curves which are shown as convex on arithmetic paper are actually concave on logarithmic paper, and therefore are less elastic at the lower end than at the higher. And (2) most of the demand curves for agricultural products which have been empirically derived are not convex curves on arithmetic paper; they are approximately straight lines; accordingly, they are strongly concave on logarithmic paper, which means that they are much less elastic at the lower end than at the upper.

⁸ The following statement typifies this general belief: "We may generalize, therefore: that as the economic feasibility of new industrial uses are realized these uses are likely to become operative at the lower end of the demand schedule for the farm product and that the demand for most farm products becomes distinctly more elastic as the lower end is approached." T. W. Schultz, "Economic Aspects of New Industrial Outlets for Agricultural Products," *JOURNAL OF FARM ECONOMICS*, XX (1938), 137. A similar view is expressed by a British writer (Sir Josiah Stamp, *The Science of Social Adjustment*, p. 55, Macmillan, 1937): . . . "In the past, the absorption of innovation has been achieved, according to contemporary explanation, by four agencies. (1) Great elasticity of demand for the old commodities at reduced prices—food and staple household necessities . . . (but) generally there is not now the scope for lower price in food or clothing increasing the demand *pro tanto* (because) the elasticity completely alters as the standard arises" i.e., the elasticity in the upper part of the curve is less than in the lower part. This idea is expressed graphically in the convex curve in the chart on page 145 of Stamp's book.

This is shown by a study of a considerable number of demand curves empirically derived from market statistics. These curves are shown on logarithmic paper in figure 3. The curves are taken from the published charts, without any comment as to their accuracy other than the closeness (or lack of it) of the scatter of the dots about the curves, which is shown in each case.

All of the curves were published on arithmetic paper in the original analyses. Many of them were straight lines on arithmetic paper. On logarithmic paper, as shown in figure 3, they are all concave, with the exception of the curve for apricots and the upper end of the curve for cotton.⁹

This means that in practically all cases, price discrimination (between markets where the elasticities of demand are equal) would decrease total incomes to producers. The only way to make discrimination pay would be to discriminate between markets with differing elasticities of demand. To this situation, the subject of Waugh's and Stigler's papers, we now turn.

III

Discriminative Prices to Different Income Groups

Waugh assumes that the average elasticity of demand of the lower income groups is greater than that of the higher income groups. If this is true,¹⁰ total returns would be increased by reducing prices to the lower income groups and raising prices to the higher income groups. This is the procedure discussed in the recent issues of this JOURNAL by Waugh and Stigler.

Waugh has demonstrated clearly that under the assumptions he makes, and with the convex demand curves (on arithmetic paper) that he uses, the total returns from a given crop would be increased by price discrimination between different income groups. The empirical evidence summarized in figure 3, however, shows that most of the demand curves

⁹ It must be remembered that these are Marshallian curves (i.e., they show the relation between prices and quantities, other things being equal). If price discrimination were applied on a wide scale, other things would be different.

¹⁰ Mr. Elkinton doubts whether this is true of such low price staples as bread and potatoes. If they rise considerably in price, he believes, they are still so much cheaper than other foods that poor people still buy nearly as much as ever; whereas rich people can turn easily to other foods if they wish. For an heroic, pioneering discussion of this question, without benefit of any statistical data, see Marshall, *Principles*, pp. 102-104.

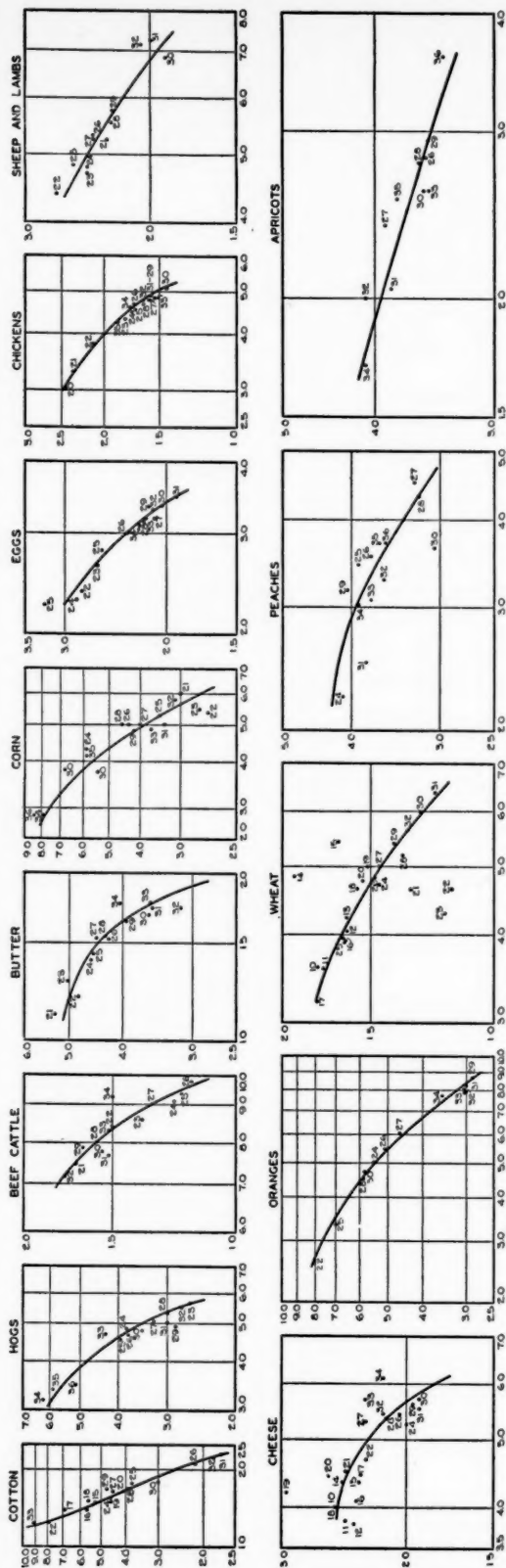


Fig. 3. Empirically Derived Price-Quantity Curves for Various Agricultural Products

for agricultural products are not convex curves on arithmetic paper, but approximately straight lines. And this means that the gains from such price discrimination would be small—much smaller than those shown for curved lines.

This is most clearly shown by Waugh's own diagrams. We may focus attention on his diagrams numbers 1 and 3, where a given amount is sold in the one case at a uniform price and in the other at two different prices.

If only a slight change is made in one of his curves—if the slightly curved line representing the demand of the low income group is straightened out between the two points (1) where the present curved line touches the vertical 0 line at the top and (2) where it touches the price and quantity lines in his diagram I, and then is extended in a straight line from this second point "south-west"—the gain in total income from diversion almost completely disappears. This straight line curve has the same average elasticity as Waugh's curve between the two points mentioned, but less elasticity than his entire curve. Yet it is still more than twice as elastic as his curve for the high income group; its elasticity is -1.65 as compared with $-.73$ (at the 15 price level) for the high income group.

With Waugh's original curve, the price discrimination shown increases the total income from 115 units to 186 units; but with the straight line curve, the same price discrimination increases the total income from 115 units only to 120 units—a gain of about 4 per cent.

That is to say: Most of the empirically derived demand curves for agricultural products are approximately straight lines on arithmetic paper. Such straight lines severely limit the gains that can be obtained by price discrimination. In Waugh's particular demonstration, as amended to make his curves more nearly like the typical curves shown in our figure 3, the gain would be negligible—only 4 per cent. This might not cover administrative costs.

Another illustration, built afresh from the ground up, is shown in figure 4A. In this figure it is assumed that the elasticity of the demand of the low-income group is unity (at a price of 20 cents) while that of the high income group is -0.5 . It is further assumed that at the price of 20 cents the two groups take equal amounts.

Without price discrimination, the total income is $20 \times 20 + 20 \times 20 = 800$ units. The maximum increase in total income that can be secured by price discrimination between these two groups with the use of non-fractional-cent prices is 4.1 per cent. (This results from charging the poor consumers 17 cents and the rich consumers 26 cents, the total income then being $23 \times 17 + 17 \times 26 = 833$ units.)¹¹ More extreme price discrimination brings in less than 833 units; in fact, price discrimination carried to the point of charging the poor consumers 13 cents and the rich consumers 34 cents brings $27 \times 13 + 13 \times 34 = 793$ units, which is 1 per cent less than no discrimination at all.

It may be, of course, that in actual life the demand of the low income group is more than twice as elastic as the demand of the high income group. If so, the gains from price discrimination would be greater than those shown above. I do not know of any statistical evidence one way or the other. My own opinion is that if the dividing line between the two groups were set so as to divide the total body of consumers into anything like equal halves, the differences in elasticity would be less than those used in Waugh's and my illustrations. While if the consumers were divided into unequal parts, that would reduce the gains unless the elasticities of demand of the two unequal sized groups differed greatly.

Mr. Waugh has very properly raised the objection, in correspondence, that while the empirical studies summarized here show that the demand curves for most agricultural products are straight lines on arithmetic paper, one cannot conclude that the separate demand curves of different income groups are also straight lines. This is true. Yet if the total curve is a straight line, and the one income group curve is convex, the other must be concave. And I believe, although I have not been able to prove it, that this would result in smaller gains from price discrimination than if both curves were straight lines.

¹¹ These price points can be located by projecting the marginal curves for the two demand curves shown in fig. 4 below the zero price line (since with price discrimination both demand curves are less elastic than unity at the prices charged) and locating a horizontal line below the zero price line at such a level that it cuts the two marginal curves at equal horizontal distances to the left of two lines drawn vertically downward from the two 20 quantity-unit points.

Why Are the Gains Small?

Why are the gains from price discrimination between different income groups shown in these illustrations so small? Or to ask the question more accurately, why can price discrimination be carried such a short distance before it brings no further increases in total income, in fact before long resulting in a decrease in total income?

It is difficult for me to answer this question in terms that are accurate and yet also easily visualized. One way to answer it is to point out that the area of a square is greater than the area of any other rectangle of equal circumference. With a single straight line demand curve on arithmetic paper, sales at any other point on the line but that point at which the elasticity is unity results in a reduction in total income; and price discrimination following the separation of the demand into two parts of unequal elasticities is as it were pulling against this tendency.

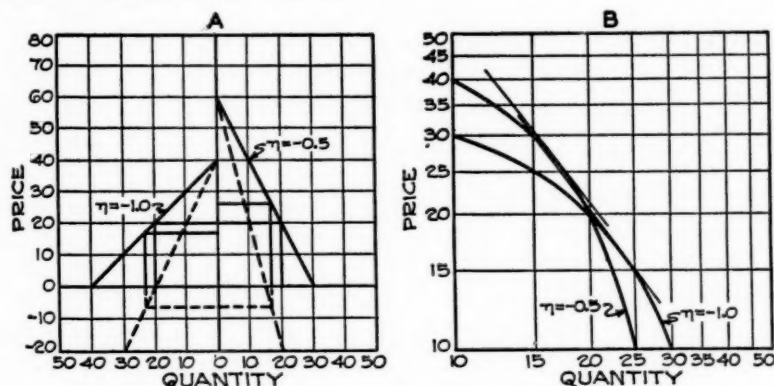


FIG. 4. MARGINAL REVENUES AND ELASTICITY OF DEMAND AT POINT OF MAXIMUM GAIN FROM PRICE DISCRIMINATION

Another way to visualize the answer is to plot the relevant parts of the two straight line demand curves shown in figure 4A on logarithmic paper, both to the right of the y axis as in conventional demand curve diagrams. The two straight lines on arithmetic paper become two concave curved lines on the logarithmic paper, as shown in figure 4B. In order to maximize returns, prices should be raised in the less elastic market and lowered in the more elastic market, to

the points where the marginal revenues become equal. If, as I formerly thought, at these points the elasticities of demand were equal, that would enable clear visualization of the reason why the gains from price discrimination are so limited when the demand curves are straight lines on arithmetic paper. For such curves become concave lines on logarithmic paper. And, even though the average elasticity of the demand for the low income group is greater than for the high income group, the point elasticity decreases as one goes down the curve; the point is soon reached at which the curve for the low income group becomes as inelastic as the point elasticity of the curve for the high income group—the more so in since the elasticity of the curve for the high income group increases as prices rise to them. This situation is shown in figure 4.

But Mr. Waugh has pointed out in correspondence that “at the points where the marginal revenues become equal, the elasticities of demand are necessarily *unequal* with discriminative pricing.” And he is right. Mr. Jessen, investigating the question mathematically, is able to show that very simply. Jessen’s demonstration is based upon the formula¹²

¹² This formula is derived as follows:

where

p = price

q = quantity taken

R = revenue

$\frac{dR}{dq}$ = marginal revenue

η = elasticity

$R = pq$

(1)

differentiating,

(2)

$$\frac{dR}{dq} = p + q \frac{dp}{dq}$$

(3)

$$\eta = \frac{p}{q} \frac{dq}{dp}$$

(4) transposing,

$$q \frac{dp}{dq} = \frac{p}{\eta}$$

substituting in (1),

(5)

$$\frac{dR}{dq} = p + \frac{p}{\eta}$$

$$\text{Hence marginal revenue} = p \left(1 + \frac{1}{\eta} \right)$$

$$\text{Marginal Revenue or } \frac{dR}{dq} = p \left(1 + \frac{1}{\eta} \right)$$

If the two marginal revenues are equal, then

$$p_1 = \left(1 + \frac{1}{\eta_1} \right) = p_2 \left(1 + \frac{1}{\eta_2} \right) \quad \text{and} \quad \frac{p_1}{p_2} = \frac{1 + \frac{1}{\eta_2}}{1 + \frac{1}{\eta_1}}$$

So that if P_1 and P_2 are unequal, as they are with discriminative pricing, η_1 and η_2 (at the points where the marginal revenues are equal) are necessarily unequal also. The elasticity at the higher price is greater than the elasticity at the lower price.

We may substitute the values used in the particular case above, where with discriminative prices, the P_1 is 26 and the P_2 is 17. Computation shows that the elasticity of the demand of the high income group at 26 cents is $-.765$, and that the elasticity of the low income groups at 17 cents is $-.739$.

The tangents to the two curves, with the elasticities just stated, are drawn in at the 17 and 26 price points in figure 4B. The chart shows that it is necessary to modify the conclusion given above, that would be valid if the two point elasticities were equal at the points where the marginal returns were equal. The modification is so slight, however, that the two tangent lines are almost indistinguishable from one tangent line. The modification is technically important, and is presented here for that reason: but for applied purposes, in this case it is quantitatively insignificant.

Conclusion

It appears, then, that while Mr. Waugh is correct in pointing out that price discrimination between different income groups would (1) increase consumption by the low income groups (2) equally decrease consumption by the high income groups, and (3) increase producer's total returns, it appears that in a few cases, where the demand curve is convex on arithmetic scales, total returns would be increased considerably; where the demand curve is concave, they would be

increased very little; and where the demand curve is a straight line (the typical situation for agricultural products) the increase in total returns would be small—under the conditions described in this paper, not more than 4 per cent. This might not be enough to cover the administrative costs.

Price discrimination may be better applied to different products than to different income groups. An illustration of such product price discrimination is fluid milk, where some of the product is diverted to a "lower" use (butter) rather than to a lower income group (which buys margarine rather than butter). The demand for the "lower" product in this case is so much more elastic than the demand for the "higher" product that the gains may be large. I suspect that this kind of discrimination—product discrimination—will prove to be more productive of gains to producers than income group discrimination. Whether the results would be on balance good or bad for society as a whole is another matter.

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LESSONS FROM PUBLIC CONTROL IN MILK MARKETING¹

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MANY economists of the liberal school maintain that government fixing or support of prices, wages, or rates should not be undertaken lightly—and then only if such control is clearly and incontrovertibly in the public interest. There is reason to believe, however, that in a highly developed, mature economic society many industries, for technological reasons, can operate efficiently only as monopolies. Whether an industry should operate as a monopoly or under competition would depend upon the characteristics of the good or services produced and the technological processes involved. If the good or service is highly standardized, the manufacturing process highly uniform as between operating units, and the benefits of large-scale operation are clearly apparent, the industry should operate as a monopoly—otherwise under conditions of free competition.

There is much misunderstanding on the subject of monopoly. It may be stated that over a period of time, privately owned and controlled monopolies, even if based upon efficiency, will operate for the private rather than the general welfare. Presumably publicly owned or controlled monopolies would operate for the general welfare. This has not always been the case, mainly because of inadequate legal protection for consumers, inexperience of public officials in such forms of activity, and the prevalence of political considerations and graft. It is popular to regard public officials as inherently or potentially incompetent or dishonest. There seems to be no valid reason, however, why the United States cannot develop public officials as capable and as honest as those in England and other countries. Such considerations, however, should not blind us to the many practical dangers and difficulties inherent in public control over economic activity.

In spite of the economic and legal intricacies of the prob-

¹ Paper No. 75, The Giannini Foundation of Agricultural Economics. This paper was read at the Annual Meeting of the Western Farm Economics Association, Bozeman, Montana, July 6, 7, and 8, 1938.

lems involved, a very strong case can be established for public ownership or public control over milk marketing. Milk is a vital human food, of special importance to families of low income. The quality of milk is standardized and guaranteed in most cities by rigid state, county, and city sanitary regulations. Methods of processing and delivery are very uniform. There are undoubted economies of large-scale operation both in processing and in the systematic organization of delivery routes. Intensive competition since 1930 has resulted in a decrease, in many markets, in the efficiency of distribution and an increase in unit costs. Few plants in an area are organized to operate at optimum efficiency; few plants are operating at anywhere near full capacity; most markets have a chronic excess of capacity over consumption needs; delivery routes carry small loads and there is a great deal of overlapping; and many costly trade practices have been introduced by distributors in order to gain or maintain business. As a result of these conditions, many distributors in individual markets are unable to earn a return on their investment. Worn-out equipment is not replaced or adequately repaired, which increases the sanitary hazard. If such conditions continue, it is only a matter of time (when existing plant and equipment are worn out) until many markets may be faced with inadequate distribution facilities.

During the succession of milk wars that have plagued so many milk markets in the United States since 1930, distributors attempted to pass their losses on to producers in the form of lower prices or on to labor in the form of lower wages. Such conditions are not unique to the milk marketing industry. The consequences, however, may be much more severe because of the importance of the product from a health standpoint. Low returns to producers may result in a deterioration of quality or milk strikes. Low wages may result in strikes and in some instances sabotage. Complete temporary cessation of milk delivery has occurred in several markets. Because of the general inefficiency of operation and the effect of costly trade practices (due to factors beyond the control of individual distributors) prices paid by consumers are appreciably higher than they would be if milk distribution was more efficiently organized. This results in a lower

level of consumption of fluid milk than would be the case if prices were lower.

A recognition of these deplorable conditions does not in any way lessen the complexity of the problem of public control or supervision aimed at increasing the efficiency of the dairy industry and thereby advancing the interest of the general public (consumers, producers, and distributors).

Since 1933 the federal and many state legislatures have passed laws for the regulation of some or all phases of milk marketing. These laws have been reviewed by various state supreme courts and by the United States Supreme Court. The most important cases decided by the latter body are (1) *Nebbin versus New York* (291 U.S. 502) 1934; (2) *Hegerman Farms Corporation versus Baldwin* (293 U.S. 163) 1934; and (3) the *Highland Farms Dairy versus Agnew* (300 U.S. 608) 1937. While the legal metes and bounds of milk-price-control regulation are still nebulous in many respects, the various court decisions make possible certain tentative conclusions. These are:

1. The production and marketing of milk in most states are intra- and not inter-state commerce and therefore subject to state and not federal regulation. In many markets, however, interstate problems arise in the source of milk supply, and cooperation (in the form of parallel legislation) between states or between states and the federal government may be necessary.

2. The production and distribution of fluid milk are not public utilities, although both are deeply affected with the public interest and, therefore, can be controlled under the police powers of the state.

3. State legislatures may delegate control powers to a board or state-wide administrative officer, if adequate standards are provided, to guide such an agency or agent in carrying out the intent of the legislature.

4. The control authority may determine and enforce prices to be paid to producers as well as resale prices to consumers and,

5. If resale prices established by a control authority are sufficient to enable efficient distributors to operate and earn a return on necessary investment, inefficient distributors

have no redress even though their costs are so high that a continuation of the control may force them out of business.

The various state laws may be divided under two general headings: those which provide only for the support of minimum (not maximum) prices to producers; and those which in addition provide for regulation of minimum resale prices. The first group usually provides that prices to be paid to producers by distributors in any market shall be determined in relation to the prevailing prices of manufacturing milk, due consideration being given to the higher costs involved in producing market milk, or else that they shall be based upon prevailing costs of producing market milk. In many states, these standards seem to be very loosely interpreted by the control authority. The second group of laws usually provides that minimum resale prices shall be so determined as to insure the consumer an adequate supply of market milk at reasonable prices and at the same time insure efficient distributors a reasonable return upon necessary investment as well as necessary operating costs. Often, however, no adequate machinery is provided for the proper determination, if such is possible, of what are necessary costs and investments and what are efficient distributors.

Both the legal and economic aspects of maintenance of minimum prices to producers are fairly well defined and generally understood. The determination and enforcement of resale prices, however, is a problem involving many complex legal, economic, social, and administrative considerations. Most of the balance of this paper will be devoted to this latter aspect of the problem, illustrated from the operation of the California milk control legislation.

In the 1937 session of the California Legislature, several complementary laws were passed and incorporated into Chapter 10, Division IV of the Agricultural Code. The two most important of these laws are known as the Young Act and the Desmond Act. The Young Act vests power in the Director of the California Department of Agriculture, to prescribe milk-stabilization areas, and if 65 per cent of the producers in such areas desire it, to set up milk-stabilization plans. These plans provide for the determination and enforcement by the Director of Agriculture of minimum prices

to producers. Local milk trade boards (consisting of seven producers) may be appointed by the Director in each area to assist him in the operation of the plans. Marketing pools may be provided if requested by 65 per cent of the producers. The expenses incurred in the administration of this law (including the operation of the local control boards) are met by a deduction of 2 mills per pound of milk fat shipped or sold by producers.

The Desmond Act extends the authority of the Director of Agriculture to establish and enforce minimum wholesale and retail prices in all milk-stabilization areas in which producer plans are in effect. Local control boards (consisting of three representatives of processing distributors, one producer-distributor, two representatives of retail stores, and one representative of the general public) may be appointed by the Director in each area to act in an advisory capacity. The expenses of administering this law are met by an assessment of 2-mills per pound of milk fat and by license fees, both paid by distributors.

In drawing up these two laws, the sponsors attempted to embody the best features of similar laws in other states. The outstanding characteristic of the California legislation is the specific standards provided to guide the control authority in the determination of both producer and resale prices. As these laws have been in operation for nearly a year and have been subjected to court scrutiny (although no court decisions have yet been made), some conclusions may be drawn as to their operation and as to public reaction to them.

Control Authority

Public regulation always involves the question of the composition and nature of the control authority or agency. Should it be a commission, and if so, how should it be constituted? Should it be some regular state official and, if so, what official? Many people contend that control should be vested in a commission to insure wider representation of the general public and to lessen the power placed in a single individual. On the other hand, the commission form of government or control is often found wanting, especially if decided differences of opinion arise among the members of

the commission. Internal dissention may seriously retard the functioning of such a body. In addition there is always the difficulty of determining responsibility. Furthermore, there is no assurance that members of a commission may not be appointed for purely political reasons and not be truly representative of public interest. On the other hand, if control is vested in a single public official, he has to assume a tremendous responsibility for a very complex phase of administration. He may, as many officials do, act arbitrarily and capriciously and hence undermine what may otherwise have been a socially desirable type of legislation.

This problem is mentioned because many groups, especially so-called consumer organizations, have been very critical of the California legislation in which control is vested in a single individual—the Director of Agriculture. The great weight of argument is for vesting such authority in a single responsible individual—provided he is a capable honest official, that definite rules and standards of procedure are provided in the law, and that adequate and ample provision is made for judicial review.

Guides and Standards

A law which is likely to affect the private property rights or interests of large numbers of individuals should provide definite standards of procedure to guide the control authority. This is a difficult matter because, especially in a new field of control, the metes and bounds of the problem are too complex or unknown for the legislative body to determine beforehand minute standards. When a law is first passed, it is probably desirable to allow the control authority a considerable measure of discretion in the hope that he will use these powers wisely. As the problem becomes more generally understood, the law can be amended from time to time to provide more definite standards and to limit the discretionary powers of the control authority. The lack of definite standards, however, increases the danger of arbitrary action on the part of the control authority and hence the possibility of adverse court decisions.

The Young Act empowers the Director of Agriculture:

"To prescribe minimum prices to be paid by distributors in accordance with a stabilization and marketing plan for fluid milk and classify such milk according to usage by distributors; provided that the prices so prescribed shall be based upon the economic relationship of the price of fluid milk for the marketing area involved to the price of manufacturing milk, taking into consideration the additional costs incurred in producing and marketing fluid milk over and above such costs incurred in producing and marketing manufacturing milk."

One may argue that this is still indefinite, but it is comparatively easy to obtain information about prices received by producers of manufacturing milk in the various parts of the state. Historical data are available showing the differential between fluid and manufacturing milk in the various markets of the state. Information is also available relative to changes in the cost factors, such as feed, labor, and transportation, which went to make up that differential. It is also possible by direct calculation to determine the additional costs of producing fluid milk and the costs of transporting such milk from the country to city plants. Finally the Extension Service farm efficiency studies for various areas, which include producers of both fluid and manufacturing milk, provide a good check on the historical information.

One difficulty arises in this connection. Minimum prices are established in advance. It is thus necessary on the basis of past data available to calculate the trend, during the next four to eight months, of the price of butter, manufacturing milk, feed prices and wages. This, however, is not a very difficult task, provided no abrupt boom or decline occurs. If an abrupt change occurs, it may be necessary for the control authority to change producer prices to accord with the unforeseen trend in events.

The provisions of the Desmond Act require that the Director of Agriculture before making his determinations relative to resale prices shall hold one or more hearings and make, or cause to be made by impartial agencies, surveys, audits and investigations relative to the capacity of plants in the various markets, consumption needs, investment in plant and delivery facilities, and the costs of processing and delivering fluid milk by the various types of distribution commonly

prevailing. After this information has been collected he must find:

1. That the minimum prices determined upon are sufficient, but not more than sufficient, to cover all necessary costs, according to the method or type of distribution, including a reasonable return upon necessary investment of reasonably efficient distributors.
2. That such prices will tend to maintain in the business of distributing fluid milk in each area such number of reasonably efficient distributors (including retail stores) as is found necessary by the Director to insure consumers of adequate and efficient distribution facilities.

The Director of Agriculture requested the College of Agriculture, University of California, to undertake to make the impartial audits and survey of distribution facilities and costs provided for in the Act. The California Department of Agriculture agreed to provide the necessary funds to cover the expenses of personnel employed by the University on the survey, which was to run from two to three years until the basic procedures and methodology had been worked out. Thereafter the California Department of Agriculture would undertake the investigational work itself.

Collection and Analysis of Distribution Costs

At the time the Desmond Act went into effect (August 28, 1937), there were twelve milk-stabilization areas in the state, including all the important cities. Five additional areas have since been approved. In these seventeen areas there are some 250 processing distributors, about 1,000 producer-distributors, and several thousand retail stores handling fluid milk. The collection of data from so many different distributors, or a representative number of them in each market, would be a tremendous undertaking.

It was apparent that an individual audit of each distributor in each market would take years and that the only feasible approach to the problem was to attempt to collect the necessary data by the questionnaire method. Accordingly questionnaires were drawn up with the assistance of accountants of several of the representative distributors and with assistance from officials of the Department of Agriculture. The questionnaires to the processing distributors

amounted to 104 mimeographed pages, those to the producer-distributors, 48 pages, and those to retail stores, 20 pages. Questionnaires were sent out in triplicate; two copies, certified as to accuracy, were to be returned when completed.

Each processing distributor was requested to give the following detailed information:

1. The estimated capacity of his plant on an 8- and on a 16-hour basis; the capacity of each type of equipment; the volume of milk and cream handled; and the daily number of hours worked.
2. Investment (original cost less depreciation) in land, buildings, and equipment, including automotive equipment.
3. Other assets, including inventories, cash on hand and in bank, investments in other corporations and in good will, patents and so forth.
4. Liabilities including stocks, bonds, reserves, and current liabilities.
5. Sales of milk, cream, and other products by type and size of container for April, May, and June, 1937. Sales were separated for milk and cream.
6. The number of packages carried, distance traveled, and nature of areas served for each wholesale and retail route.
7. Processing costs with a separation from total costs, of costs incurred in handling milk and cream only.
8. Wholesale selling and delivery costs and retail selling and delivery costs.
9. Advertising costs.
10. Administration and general office costs.

Distributors were asked to supply such additional information as would assist in the analysis of their data. The questionnaires to producer-distributors and retail stores requested less detailed information. Processing distributors in the various markets returned some 150 questionnaires, producer-distributors about 145, and retail stores only 50. Many of the questionnaires returned contained very inadequate data, in spite of the fact that distributors were assisted by a number of accountants employed on the survey. In many of the markets, especially the smaller markets, it was necessary to send men into the field to complete the questionnaires wherever possible. Up to date, analyses have been completed and reports made to the Director of Agriculture on eleven marketing areas, including Alameda County, Los

Angeles County, Sacramento, and San Francisco. Resale price orders have been made for the first three markets.

The analysis of the data submitted presents many intricate problems because most of the costs incurred in processing and in distribution are joint costs. It was necessary to adopt cost-allocation methods which would be equitable to distributors and yet not load milk with an undue proportion of the expenses. Before deciding upon appropriate allocation methods, the various studies of the Federal Trade Commission, the analysis of distribution costs in the Boston market made by Rittenhouse and Company, and the uniform accounting system recommended by the International Association of Milk Dealers were carefully analyzed. Advice was sought also from Professor W. A. Paton of the Economics Department, University of California. Space does not permit a description of the detailed methods of allocation that were finally adopted. In any case, these are being modified from time to time as more accurate data are collected and as knowledge of the intricacies of market-milk distribution are developed.

The determination of the capacity of individual plants also presents numerous difficult problems. Many distributors have their plants so arranged as to maintain a continuous flow of product during the full period of operation; others operate each type of equipment for only a few hours a day, the same laborers performing successive functions. As equitable a basis as possible of determining the capacity of individual plants was worked out with the assistance of Mr. E. P. deGarmo, of the Mechanical Engineering Department, University of California.

In submitting reports to the Director of Agriculture on each market, the following steps were taken:

1. Each distributor's costs were determined on a unit basis by product and container under four headings: (a) processing, (b) selling and delivery, (c) advertising, and (d) administrative and general office—separate for wholesale and retail.

2. An array of costs per quart² of milk sold was then made, running from the distributor with lowest costs to the distributor with highest costs.

² About 75 per cent of all milk sold is in quart containers.

3. Next an estimate was made of the peak daily consumption requirements for the marketing area. This was obtained by dividing the annual volume of milk distributed in the area by 365 and adding 20 per cent to care for seasonal and daily peaks.

4. A tabulation was then made of the estimated capacities of each distributor arrayed in order of costs per quart.

5. The last distributor whose volume is necessary to meet market requirements is regarded as the key or supply-line plant. It is this distributor whose costs are considered by the director in determining resale prices in the market.

6. A detailed analysis is then made of the costs of the supply-line plant to enable the Director to determine whether all the costs of the key or supply-line plant are "necessary" costs. For example, this plant may have excessively high administrative or advertising expenses, part of which the Director may disallow. In this connection, data are supplied also on the percentage of capacity utilized by each distributor and the average mileage of and loads handled by wholesale and retail trucks. Considerable differences in plant and delivery costs have been found to exist in individual markets and between markets.

7. An estimate is then made of the investment of the supply-line plant and the proportion of such investment applicable to fluid milk. Interest at the rate of 6 per cent on such investment is estimated and applied to each unit.

8. To the handling cost plus return on investment per quart is added the cost of the raw material, and the result is the minimum price per quart that the Director approves for the area. Similar calculations are made for all other size containers.

The hypothetical example on the next page illustrates the procedure. In actual practice, the problem is more complicated because the results obtained for the supply-line plant may be a fraction of a cent above or below a full cent. The Director is then faced with the problem of determining upon a price that may result in a lower or no return on investment for the supply-line plant or a price which will result in a return greatly in excess of 6 per cent. Difficulties also arise when it is necessary to change the price to producers. Resale prices to consumers are usually changed 1 cent a quart at a time. The equivalent change for a pound of milk fat would be around 12 cents. It is, however, seldom that economic conditions would warrant a change of such magnitude. It may be necessary to change resale prices one-half cent a quart at a

TABLE 1. DETERMINATION OF DISTRIBUTION COSTS PER QUART (CENTS)

Distrib- utor's number	Peak daily capacity (gallons)	Volume handled (gallons)	Percentage of capac- ity util- ized	Wholesale				Retail			
				Cost per quart	Interest on invest- ment	Cost of product*	Total cost	Cost per quart	Interest on invest- ment	Cost of product*	Total cost
1	5,000	4,000	80	2.5643		5.64	9.00	5.1027		5.64	12.0
2	5,000	3,000	60	2.6217		5.64	9.00	No retail		5.64	12.0
3	10,000	6,000	60	2.7334		5.64	9.00	5.3342		5.64	12.0
4	3,000	2,000	66	2.8013		5.64	9.00	5.6677		5.64	12.0
5	15,000	8,000	53	2.8643		5.64	9.00	5.8434		5.64	12.0
6†	8,000	4,000	50	3.2091	.1509	5.64	9.00	6.1413	.2187	5.64	12.0
7	12,000	6,000	50	3.2242		5.64	9.00	6.4492		5.64	12.0
8	5,000	2,000	40	3.3921		5.64	9.00	6.4137		5.64	12.0
9	3,000	1,000	33	3.3996		5.64	9.00	No retail		5.64	12.0
10	7,000	3,000	43	3.5267		5.64	9.00	6.6671		5.64	12.0
11	10,000	3,000	30	3.5786		5.64	9.00	6.8562		5.64	12.0
12	3,000	1,000	33	3.8427		5.64	9.00	6.9431		5.64	12.0
	86,000	43,000	50								

* Based on 3.6 per cent milk fat at 73 cents per pound of milk fat.

† Key or supply-line plant.

Note: Peak Daily Market Requirements: Wholesale 26,000 gallons
 Retail 19,000 gallons
 Total 45,000 gallons

time, but this is strenuously opposed by both distributors and stores.

Only the larger distributors have accounting systems which permit a ready segregation of costs, and even in such cases much important data are lacking. Different methods of cost allocation are used which give widely varying results. Many distributors have special operations, the effect of which on unit costs is often obscure. Furthermore, changing conditions, such as increases or decreases in volume handled, introduction of new trade practices, and changes in the prices of cost factors make continuing analyses essential, if public regulation is not to freeze the "status quo."

Another baffling problem arises in connection with the determination of store costs of handling milk. Obviously in stores handling from 1,000 to 4,000 separate commodities it is extremely difficult, if not impossible, to determine with any degree of accuracy the costs per unit of each commodity handled. In the first place, there are wide differences in methods of operation and expenses between various types of stores; for example, cash-and-carry units of chain stores, super-markets, and neighborhood stores. In the second place, few stores, even chain stores, attempt any segregation of costs by commodities. All that most stores have is a record of gross sales of all commodities, the cost of goods and expenses by natural classifications. The average cost of doing business or the average mark-up doesn't help much because margins vary on different commodities with such factors as the percentage that each commodity contributes to total sales value, the handling requirements of each commodity, the amount of breakage and spoilage, and the rate of turnover.

For the purpose of this study, an attempt was made to determine (a) the customary mark-up in cash-and-carry stores as compared with the mark-up on other commodities of a somewhat similar nature; (b) the cost per unit of additional expenses (for example, refrigeration and special handling) incurred in the handling of milk; and (c) such other factors (consumer appeal, regularity of purchase) which may justify handling milk at higher or lower than average margins. Such information is submitted to the Director for his final determination.

This all too brief review of procedures in the determination of resale prices in California affords some idea of the complexities of administering price-fixing laws. Although every reasonable effort has been made to arrive at prices which are equitable, many intricate problems still remain unsolved.

Minimum versus Maximum Resale Prices

Practically every state which provides for public regulation of resale prices restricts itself to the enforcement of minimum and not maximum prices. Decisions by numerous courts have indicated that regulation of maximum prices places an industry in the position of a public utility. Most state constitutions place regulation of public utilities in the hands of a public utility commission. The legal procedures by which maximum prices are determined are very much more complex than those for the determination of minimum prices. Furthermore, the problem of "due process" is involved, because the enforcement of maximum prices places an upper limit upon returns on investment. Enforcement of minimum prices, on the other hand, places a lower limit on returns on investment and grants those controlled some protection against demoralized market conditions.

It is usually assumed that competition will ensure that minimum prices become maximum prices, but if the minimum is set high enough to afford protection to efficient operators, they are granted ample protection. Conceivably, distributors in some markets may ignore the minimum prices and agree upon a higher schedule of prices. If this practice becomes widespread, distributors will run the risk of new legislation which will provide for the determination and enforcement of maximum prices in place of or in addition to minimum prices. This will be necessary for the protection of consumers.

There is, moreover, great danger that the enforcement even of minimum prices may freeze existing inefficient methods of operation and trade practices. In the interest of consumers, minimum resale prices at all times should be low enough to encourage distributors to effect every economy of operation that is feasible. Here, however, there may be a

serious conflict between what is legally permissible and what is economically desirable.

*Court Review of Administrative Procedures*³

Price fixing impinges upon private property rights. It can, therefore, be taken for granted that every new statute and the procedures followed will come up for court review both as to the constitutionality of the basic law and the validity of procedures and hearings. Such cases, starting usually in the superior courts and reviewed in the Appellate, State, or United States Supreme Court, usually take months and even years. Meanwhile, enforcement is difficult and often results in severe handicaps to producers and distributors complying with existing orders.

Even if the constitutionality of the basic law is upheld, the courts may decide that administrative procedures are wanting in some respects or that administrative determinations have been inequitable. For instance, recent United States Supreme Court decisions have stressed the necessity of an administrative agency which exercises quasi-judicial functions, guaranteeing to all parties affected a "fair" hearing. This apparently involves not only giving such parties an opportunity of presenting factual information justifying their contentions but also permitting them to examine and analyze the basic data on which the control authority bases its determinations. In the case of the milk-control legislation, information supplied by individual distributors is confidential and involves business secrets. Whether courts will require

³ Most of these points were involved in *Ray et al. v. Brock* in the Superior Court of Los Angeles. After a long court trial starting in March, 1938, a 107-page detailed decision was rendered by the trial judge on August 19, 1938. In its decision, the court upheld the constitutionality of the California milk-control legislation in principle as a valid exercise and delegation of police power. The court also upheld the constitutionality of the Desmond Act (resale prices). It ruled, however, that several sections of the Young Act (producer prices) were unconstitutional because of vagueness and of inadequate guides and standards. It ruled, furthermore, that most of the hearings held under the two acts were invalid, because the Director of Agriculture did not place in record and before the hearing all the data and information on which he based his findings. The court held that in consequence the procedure could not be regarded as constituting a "fair and full hearing." The decisions of the Superior Court of Los Angeles both as to constitutionality and invalidity of procedures are being appealed. In any case, the strictures of the court (if upheld) could be overcome by appropriate amendment in the next session of the California Legislature and by changes in hearing procedures.

that such information be subjected to public scrutiny at hearings is a moot question.

Furthermore, although it may be possible (from an economic standpoint) to justify the methods by which resale price determinations were made, will the courts approve of such methods? For instance, will the courts decide that the supply-line plant theory is valid or that the methods adopted to determine store costs are equitable? Furthermore, will the courts uphold the right of the control authority to determine that certain costs are not "necessary" or permit the control authority to exert pressure upon the market-milk industry, through low prices or otherwise, to eliminate certain uneconomic trade practices? It must be remembered that even judges have ideas on important economic questions and often allow such ideas to influence their legal decisions.

As was stated earlier, public regulation of milk marketing is largely an unexplored field. Although court decisions have supplied the broad background for such regulation, the detailed outlines are still undefined. But even if such details become better established, there will still be many difficult problems of an administrative nature, for even the economic field is hazy. Conditions often change with amazing rapidity and new problems arise. Will it be administratively possible to make the necessary adjustments in regulation plans in order to make control something alive and beneficial from a public-welfare standpoint? In the final analysis this can be the only safe test of the social desirability of public control over milk marketing or any other industry.

ECONOMIC THEORY OF THE WISCONSIN
TARIFF RESEARCH COMMITTEE:
A REPLY TO PROFESSOR W. A. MORTON

HENRY SCHULTZ

University of Chicago

I. The Question at Issue: The Price Differential Method

IN 1935 I published a critical analysis of the method of measuring the effectiveness of the tariff that was used in the studies of the Wisconsin Tariff Research Committee.¹ I had long hesitated to undertake that chore because it was evident from the methodological remarks of Professor Walter A. Morton, one of the three members of this Committee, that his frame of reference is so different from that used by practically all economic theorists, that it would be difficult to come to an agreement with him on fundamentals. But the misinterpretations and misapplications of another method of measuring tariff effectiveness—the so-called “equilibrium method”—with which my name has been connected were so flagrant, and the requests from economists that I point out the errors and confusions in the economic and statistical theories underlying the Wisconsin studies were so persistent, that I reluctantly decided to undertake the analysis.

I began with a verbal, graphical, and algebraic explanation of the “equilibrium method.” I pointed out the fact that it is based on a comparison of the domestic and foreign demand and supply curves before and after the imposition of the duty. More specifically, I called attention to the fact that the entire method is based on a consideration of the necessary conditions which must obtain if equilibrium is to be restored after the imposition of the duty. I argued that if *imports continue*, these conditions are that:

1. The quantity of imports demanded by this country must be equal to the quantity of exports supplied to this country.
2. The domestic price must exceed the foreign price by the full amount of the duty, after allowance has been made for cost of transportation.

¹ Henry Schultz, “Correct and Incorrect Methods of Determining the Effectiveness of the Tariff,” *JOURNAL OF FARM ECONOMICS*, XVII, No. 4 (Nov. 1935), 625-645.

Then I gave a detailed explanation of the role which these conditions, together with the domestic and foreign demand and supply curves, play in determining how the price increase is divided between the domestic consumers and the foreign exporters, and how the other conditions of supply are affected. Finally, after carefully pointing out the limitations and difficulties of this method, and dealing with Professor Morton's criticisms of it, I turned to the "price-differential method" used by the Wisconsin Tariff Research Committee. I emphasized that fact that, contrary to the equilibrium method, this method is the acme of simplicity. It consists essentially of finding the average difference between the domestic and foreign prices, and multiplying this difference by the consumption before the imposition of the tariff, and calling the result the burden of the tariff. In the case of sugar, when transportation costs were allowed for, the observed spread between the New York and the Cuban prices for 1922 to 1929 was found equal to the full amount of the tariff on Cuban sugar²—just as is assumed in pure theory.

Faced with these findings, I asked:

1. Was it really necessary to spend so much time, energy, and money to "prove" statistically that the domestic price of sugar exceeds the foreign price by the full amount of the duty, when allowance is made for transportation costs? What other finding was possible when the commodity is imported, and there are no differences in quality between imports and exports and the customs officers are diligent in the enforcement of the law? It should be easy by the price differential "method" to determine the effect of the tariff on the price of each of our numerous dutiable commodities by merely consulting the Tariff Act and a schedule of freight rates!

2. Do not Ellis' painstaking statistical computations constitute a perfect verification of the much-maligned "neoclassical" theory which assumes that the difference between the domestic and the foreign price must be equal to the duty (our T) when allowance is made for transportation costs?

3. In computing the cost of the duty to the American consumer, by the price differential "method," why does not Ellis multiply the rate by the consumption for the year *immediately* preceding the imposition of the duty? Why count the cost only on the amount of

² Lippert S. Ellis, *The Tariff on Sugar* (The Rawleigh Foundation, 1933), 142-144.

sugar purchased after the imposition of a duty? Why not take into consideration the loss (monetary or otherwise) to those who are compelled to reduce their consumption of sugar?

Until the foregoing questions are satisfactorily answered, we are justified in concluding that the price differential approach which has the blessings of the Wisconsin Tariff Research Committee has no scientific foundation. It attempts to "prove" statistically that when allowance is made for transportation costs the price inside the tariff wall is higher than the price outside the tariff wall by the full amount of the duty—something which we are supposed to have learned in our elementary "Principles." It assumes that this difference is borne entirely by the domestic consumer. It does not, and cannot, determine how this increase is divided between the domestic consumer and the foreign exporter—which is what we generally understand by the question of the effect of the tariff on price, and what the "equilibrium method" is designed to answer.³

II. *Professor Morton's Defense of the Method*

In a heated reply published two years later,⁴ Professor Morton takes vigorous exception to my analysis. But before joining issue with him on fundamentals, it is desirable to correct a misstatement of fact.

It is not true, as Professor Morton claims, that

Because the work of the Wisconsin Tariff Research Committee under the editorial supervision of Professors John R. Commons, Benjamin H. Hibbard and myself, failed to conform to his pattern, he [Schultz] claims that our method is incorrect.⁵

The method is, I claim, incorrect for the very obvious reasons stated in the third numbered paragraph above: (1) It assumes that the entire price difference is borne directly by the domestic consumer. (2) It does not, and cannot, determine how this increase is divided between the domestic consumer and the foreign exporter. These criticisms do not derive their validity from the "equilibrium formula." Thus in 1922 the late Truman G. Palmer, a well-known sugar statistician, showed by empirical comparisons of New York quotations of

³ Henry Schultz, *op. cit.*, pp. 637-38.

⁴ Walter A. Morton, "Tariff Theory," *JOURNAL OF FARM ECONOMICS*, XIX, No. 4 (Nov. 1937), 845-860.

⁵ *Ibid.*, p. 846. Italics mine.

raw and refined sugar with refiners' margins and the changes in the tariff rates that:

The oft-repeated statement that the full amount of any increase or decrease in the U. S. tariff rate on imported raw sugar is reflected in the domestic wholesale price of refined is in error.

Analysis of the New York quotations of raw and refined sugar for the past 30 years shows that whenever the U. S. duty on sugar has been increased the Cuban producers have lowered their prices of raws and American refiners have reduced their margin between raw and refined; and whenever the duty has been reduced, the Cuban producers have raised their price of raws and American refiners have increased their margin between raw and refined. As a result, but a minor portion of any increase or decrease in the duty is reflected in the domestic price of refined sugar.⁶

True, Professor Morton's misunderstanding of the "equilibrium formula" and of other economic and statistical notions and the misapplications of the formula in an otherwise excellent study by a former staff member of the Wisconsin Tariff Research Committee constituted the point of departure of my article. But I did not criticize the Committee for not applying my formula, but for using something which is not so good. I certainly did not make unjustified claims for it. On the contrary, one of the objectives of my paper was to point out the limitations of the formula and to call attention to the need for more general and more accurate measures of the effect of the tariff on conditions of supply. To quote from my paper:

The "equilibrium method" is, however, difficult to apply, since it calls for demand and supply curves which it is generally very difficult, if not entirely impossible, to obtain. Furthermore, it cannot measure the long-run irreversible effect of a change in tariff policy. . . . It is not the contention of this paper that the equilibrium method can be applied to estimate the effect on conditions of supply of all tariffs which arise in practice. Thus, the commodity in question may be subject to monopoly control, or the effect of the tariff on the prices of other commodities and on the

⁶ Truman G. Palmer, *Concerning Sugar*, p. E-17-A. (This is a loose-leaf service formerly published by the U. S. Beet Sugar Association, then by the United States Sugar Manufacturers' Association, and now discontinued.)

Palmer's computations were based on the data for two months preceding and the two months succeeding the following tariff changes: the Wilson Tariff of 1894, the Dingley Tariff of 1897, the Cuban Reciprocity Tariff of 1903, and the Underwood Tariff of 1914.

balance of international payments may be too great to be neglected, or it may be impossible to derive the statistical form of the demand and supply functions. But all attempts to derive more general and more accurate measures of the effect of the tariff on conditions of supply must take as their point of departure the single-commodity equilibrium method which is the basis of formula (9). The formula cannot, therefore, be dispensed with, but it must be employed with great care and only after a careful historical study of the industry or commodity in question.⁷

The ground has now been cleared for a consideration of the most important point raised by Professor Morton, namely, that it is precisely the assumption of the equilibrium method that the price differential must be equal to the duty, which must be verified, and that its investigations by the Wisconsin Tariff Research Committee showed this assumption was false in several instances.

III. *My Reply*

I was well aware of these findings of the Wisconsin Tariff Research Committee. But since in his original criticism of the equilibrium method Professor Morton paid surprisingly little attention to them, having relegated them to a footnote,⁸ I did not feel justified in giving them much weight. Waiving, however, Professor Morton's change of emphasis, I wish to reiterate my conviction that these findings do not constitute a valid reason for taking the *observed differential* between the domestic and the foreign price, multiplying it by the total consumption, and calling the result the tariff burden. Nor do these findings constitute a justification for Professor Morton's criticism of the equilibrium formula.

It is a *fact*, not merely an assumption, that the importer pays the foreign price (i.e., the price of the article in bond) plus the duty. Therefore, the difference between the duty-paid price (i.e., the price paid by the importers) and the bond price *must* be equal to the duty. *No amount of talk about "logic in its pure form" and "propositions regarding the experimental world," can obscure this fact.* The problem which confronts, or should confront, the student of incidence of taxation is, Why is this equality between the price dif-

⁷ Henry Schultz, *op. cit.*, pp. 640-641.

⁸ See Lippert S. Ellis, *op. cit.*, p. 172, note 29.

ferential and the duty not observed in many instances in which we compare the foreign price with the *wholesale* price rather than with the price paid by the importer?

Several explanations suggest themselves:

(1) The commodity may be intermittently imported and exported;

(2) The commodity may be subject to complete or partial monopoly control;

(3) The domestic and foreign price series may relate to different grades or qualities;

(4) The commodity may be one of a group of closely related (competing or completing) goods and the effect on the prices of the other goods of a tariff on one of them may be too great to be neglected.

It was up to Professor Morton and the other members of the Wisconsin Tariff Research Committee to investigate these and other hypotheses.

The situation is analogous to that which also confronts economists in fields other than taxation. It is an *observed fact* that for the period 1896-1914 there is *positive correlation* between total consumption and money price of each of the following commodities: sugar, corn, hay, cotton, potatoes, oats, barley, rye, and buckwheat. Would Professor Morton conclude that, therefore, the *demand curves* for these commodities are positively sloped? Is that what he asserts in his class room? We know, however, that by adjusting the data for changes in population, the price level, and in other factors, the negative slopes of the demand curves emerge in a clear and unambiguous manner.⁹ (Similar adjustments also yield negatively sloped curves from the positively correlated time series of the consumption and prices of manufactured goods.) Unless Professor Morton is willing to maintain that "the facts of our economic life" prove that the demand curves for these crops are positively sloped, that to adjust the data so as to obtain (if possible) the underlying negatively-sloped curves "merely 'proves' preconceptions," he is not consistent in taking the inequality in question as a disproof of the economic assumptions underlying the equilibrium formula.

There remains to be considered Professor Morton's last

⁹ See my *The Theory and Measurement of Demand* (Chicago, 1938).

and indirect defense of the Wisconsin Tariff Research Committee's approach to the tariff problem which is an attempt to discredit the "equilibrium formula" by showing that it may lead to improbable results. Thus Morton shows that my conclusion, namely that "under such average conditions of demand and supply as had prevailed during the five years before the war the increase in price due to a tariff on sugar would be approximately 86% of the duty,"¹⁰ would also follow from the formula even if only one ton were imported, which is, of course, very improbable. And he makes much ado about it. He asks, "Is a method which gives these results the only 'correct' one?" (p. 855).

This argument is based on bad statistics and worse economics. In my formula the concrete, statistical demand curves considered were straight lines. They happened to give fairly good fits to the data within the observed range of the consumption—say, between two and five million tons. This does not mean, however, that they can be safely extrapolated to the origin—several million units beyond the range of the data.

Of the other results which Professor Morton obtains by substituting different values for the variables in my formula, some were expressly given by me (pp. 203–204 *Statistical Laws of Demand and Supply*); some—the ones given on page 856—merely verify well-known theorems in incidence of taxation which were also given by me on page 194 of the same book; while others are based on a misunderstanding: Thus he thinks that between 1928 and 1935 I changed my definition of T_i , the tax on the imported commodity, to mean "an historical or statistically ascertained differential" (pp. 855–56). There is no basis in fact for such a belief.

Indeed, this entire section (Section IV, pp. 852–860) leaves me wondering what Professor Morton is driving at. None of his arguments has a bearing on the main issue, and even if his computations were as damaging to the "equilibrium formula" as he believes they are, they would not justify his price-differential method which he had applied and justified on grounds other than those suggested by his latest computations.

¹⁰ Henry Schultz, *Statistical Laws of Demand and Supply with Special Application to Sugar* (Chicago, 1928), p. 204.

IV. *Conclusions*

The second paper by Professor Morton has the merit of at least centering attention on the main issue: The extent to which general economic preconceptions should determine the character of a statistical investigation. Although in its broader phases this question admits of honest differences of opinion, *in the particular problem before us*, namely, the determination of the burden or incidence of a tariff, reliance on the observed facts without taking into consideration the elements of the theory of incidence of taxation has yielded, and is likely to continue to yield, very questionable and inconsistent results. For, in the words of no less an authority than F. Y. Edgeworth, the problem is just "too complicated for the unaided intellect to deal with." To attack it successfully we must make use of the type of analytical and factual information which are called for by the "equilibrium method."

The arguments which Professor Morton advanced in favor of the "price differential method" are, I regret to say, still based on erroneous notions of economics and statistics. The fact is that the "price differential method" is not at all a method for determining the incidence of the tariff. It is, or should be, simply a step in the preliminary analysis of the data.

The "equilibrium method" is, however, also subject to several limitations which I have always taken pains to point out. Perhaps the most important of these are (1) its failure to take into consideration the effects of the tariff on the prices of other commodities and on the balance of international payments; (2) its inapplicability to monopoly situations. But these limitations can be overcome. In any event, all attempts to derive more general and more accurate measures of the incidence of the tariff must take as their point of departure the special equilibrium method which constitutes the basis of the "equilibrium formula." Until such measures are developed, the formula cannot be dispensed with, but, as I said in my previous paper, it must be employed with great care and only after a careful historical study of the industry or commodity in question.¹¹

¹¹ Henry Schultz, *Correct and Incorrect Methods of Determining the Effectiveness of the Tariff*, *op. cit.*, p. 641.

REJOINDER TO PROFESSOR SCHULTZ'S REPLY

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AT THIS stage of the discussion it seems advisable to emphasize basic points of difference and agreement over methods of tariff investigation and to minimize matters which relate primarily to details of our own studies. The monographs are available for those interested in specific commodities, and the readers of this JOURNAL are probably more concerned about general ideas than about the validity of particular conclusions. But there are also other considerations. Professor Henry Schultz in his original comments brought before the public the general issues of theory which lay buried in our monographs, and he thus contributed to the advancement of knowledge. Under these circumstances, to find unnecessary fault on minor issues would make us appear ungrateful for the service he has rendered.

I

For these reasons, if it were possible to clarify the other issues without mentioning details, we would prefer not to emphasize again that the methods attributed to us are not those which we actually used. The gravamen of the charge against us is that we used the differential as the measure of the duty. In some cases we used it as the closest approximation, but we did not in our monographs, and do not now, accept the existence of a differential as proof that the tariff is borne by the consumer. In my "Tariff Theory,"¹ I said, "If we had always used, as alleged, the differential as the measure of the burden upon the consumer, our work indeed would be fallacious. But the fact is that we recognized the tendency for the duty to depress the foreign price and on different occasions attributed the price spread wholly or partly to it." This statement is buttressed by footnotes to each of the monographs.² We assumed that the foreign price was depressed, not because of the price movements "before-

¹ JOURNAL OF FARM ECONOMICS, XIX (No. 4), 850.

² *Ibid.*, footnote 37.

and-after" a tariff, but on the assumption that demand is probably elastic.³ In order to make sure that no one would misunderstand our position we emphasized again and again that differential figures, where used, were "maximum" ones. Professor Schultz has used some rather strong phrases about our work: "propaganda," "misrepresentation," and the like. I believe a more careful reading of the monographs will show that we are not guilty of these charges.

His complaint then, insofar as it has any validity, cannot be that we failed to recognize the tendency of the duty to depress the foreign price. We did that. It must be rather that we did not attempt, as he does, to measure the results with mathematical accuracy.⁴ And how does he do it? Simply by dispensing with the factors he cannot measure by ruling them out as "accidental errors." Now if we had termed every economic force whose weight we could not measure, "an error in the data," we also could have arrived at "exact" results. Instead, we were capable only of approximations.⁵

Taussig and White came to the same conclusions about the sugar duty as we did. They regarded Schultz's elasticities as inapplicable to the period under consideration.⁶ Our re-

³ We cannot accept the type of empirical proof offered by the Sugar Beet Interests and cited by Professor Schultz. To do this would in our opinion be guilty of the fallacy of post-hoc, etc., discussed by Ellis as the "propaganda or the before-and-after method" (Ellis, p. 117). Moreover, Ellis' examination of the refiner's margin (pp. 134-139) shows that the contention that a part of the duty is absorbed by the refiners is of doubtful validity. We accept, however, the purport of the argument made by Schultz, namely that the contention that the tariff depresses the foreign price is a well worn argument which was made by the sugar beet interests, the Cubans, and many others. Indeed, it constituted a slogan of the Republican Party in 1920. Both Professor Schultz and ourselves were thoroughly familiar with it.

⁴ On this point I have nothing to add to the note on "What a Tariff Study Should Reveal," by Professor B. H. Hibbard, *JOURNAL OF FARM ECONOMICS*, XIX (No. 4), 950.

⁵ Ellis (pp. 144 and 145) emphasizes that his results with sugar were "approximations," that the figure given "should be considered as a maximum one—subject to modification by further statistical methods" (p. 22 and p. 150). We then showed how Schultz found the "exact" amount (p. 118) and emphasized that "the actual cost of the tariff to consumers is probably slightly less than the full amount of the duty" (p. 22). We cited the theoretical effect on foreign and domestic marginal cost, as developed by Dr. Phillip Wright (p. 134). And then stated specifically: "There are at least three reasons for believing that the world price would rise a little in the absence of an American sugar duty. An increase in American consumption, a decrease in American and Island production, and a resulting decrease in Cuban sugar on the world market" (p. 130). And in the introduction we called attention to the controversy concerning the absorption of the duty by Cuba (pp. 16 and 17). The same type of qualifications permeate the other monographs.

⁶ Citing references regarding elasticity of demand, they stated that "as regards

sults, therefore, appear to be reasonable to others besides ourselves, and that is one, though not the only, test of truth.

II

We do not claim to know the statistical demand curves for the various commodities under consideration. Does that mean that we deny the simple rationale of demand theory? Not at all. The hypothesis that the demand curve is negative is a good presupposition from which to begin an investigation. I do not deny that all other things remaining the same, the same individual or group at the same place at the same moment of time buys more of a commodity at low prices than at high prices. But from that general assumption it is not reasonable to deduce the demand curve for a particular commodity by manipulating the data till the curve takes a particular form. The sugar data permitted a wide selection of curves. Schultz chose the one which best illustrated his presuppositions. Where data conflicted with his assumptions, he treated the data as "accidents." This essentially is to "prove" preconceptions by ignoring whatever data conflict with them. By such a procedure almost any assumption can be proved.

Take the supply curve for sugar, for example. It was affected by the World War, recovery of the industry in Europe, subsidy, wild fluctuations in exchange rates, and new discoveries et cetera.⁷ If we had followed the procedure of Schultz we could have derived a supply curve, by treating all of these factors as "errors in the data." And if we refused to test the curve by extrapolation and prediction, nobody could prove that it was not "the" supply curve for sugar.

Even if we grant that under *ceteris paribus* assumptions the supply curve is positive, would that justify us in so manipulating an actual historical curve as to get a positive curve? Java discovered POJ 2878, a new variety of cane which increased the output 50 per cent. Might not the historical series show that they could profitably produce

theory they are most interesting, but not of much moment for the tariff. The chief thing significant for us is that elasticity of demand for sugar at the lower prices of 1925-1932 was very slight; that is, demand was 'inelastic,' apparently because the point of satiety was being approached," p. 380, *Some Aspects of the Tariff Question*, 1931 Edition.

⁷ Ellis, pp. 118-119.

more at lower prices than at former high prices? So with all technical improvements. Again, take a subsidy: Suppose a government subsidizes sugar producers to produce more at lower prices, as actually happened, are we justified in treating this as "an error in the data?" Obviously, we would do it only if we knew nothing about the data.

So it is with the demand curve. In deriving it, Schultz ignored radical changes in monetary income and in total employment and output in industry as a whole, all of which affect the actual monetary demand for sugar. While I do not contend that the demand for any commodity will be greater at high prices than at low prices, *ceteris paribus*, I do deny that we are safe in assuming that in an historical time series, the demand curve is always negatively inclined. It may vary with the business cycle. People may be willing to buy more of a commodity at high prices during a year of high incomes than at low prices during a year of small incomes. Now if a statistical method properly takes into account all of these variations and measures their effect, it will eliminate their influence. But this has not been done. In the sugar study, for example, Schultz took no account of changes in the total volume of money income but simply adjusted for the price level. Now, as has well been shown,⁸ an individual cannot eliminate the effects of changes in the quantity, or income velocity of money simply by "deflating" for the price level. Though Schultz is not explicit on this point, he seems to follow the assumptions of David Hume and John Stuart Mill that the only effect of an increased quantity of money is on the level of prices and not on particular prices. It is now recognized that this view is incorrect. Much depends on the method of injecting new money into the economic system, the point and the rate of injection. These facts are particularly important for a period like the 1920's when credit was being greatly expanded.

From this analysis we see that the value of actual curves is dependent upon the success an individual has in knowing and eliminating all of the "disturbing" factors in the

⁸ Ludwig Von Mises, *The Theory of Money and Credit*, Part III, ch. V; F. A. Von Hayek, *Prices and Production*, Lectures II and III; John Maynard Keynes, *The General Theory of Employment, Interest and Money*.

data; but this procedure requires a knowledge of the presence of these factors and their actual weight. To dispense with these factors by "smoothing curves" is simply a mathematical way of ignoring them. We chose not to do this. Schultz does so. We gave the reader both methods and permitted him to make his choice.

III

The point at issue between ourselves and Schultz, is not whether we have taken into account the factors he mentions, and which are contained in the formula, but whether we take them into account by subsuming them under broad categories and by the smoothing of time series. We preferred to analyze the facts one by one, starting with hypotheses and examining data, then adjusting theory to fact and so on, until we reached a conclusion which seemed to fit the facts. When we came to a conflict between an assumption and a stubborn fact, we pointed out the difference, but we accepted the fact. If we had started with the formula, we would not have discovered many disconcerting facts. For example, we would not have found that during periods of continuous imports, the differential between the foreign and domestic price was not always equal to the duty.⁹ Schultz continues to insist that my facts are incorrect because they conflict with certain assumptions, and when I point out that such a view is based upon his peculiar epistemology, he calls it "talk." The real problem is then whether a method which moves along step by step, using hypotheses, but modifying them by facts and creating new hypotheses, should be discarded in favor of one which is based upon a simple assumption which may or may not conform to experience. The difference between the two methods has been well stated by Mr. J. M. Keynes:¹⁰

"The object of our analysis is not to provide a machine, or method of blind manipulation, which will furnish an infallible answer, but to provide ourselves with an organised and orderly method of thinking out particular problems; and, after we have reached a

⁹ JOURNAL OF FARM ECONOMICS, XIX (No. 4), 849-850.

¹⁰ Keynes, J. M., *The General Theory of Employment, Interest and Money*, pp. 297-298.

provisional conclusion by isolating the complicating factors one by one, we then have to go back on ourselves, and allow, as well as we can, for the probable interactions of the factors amongst themselves. This is the nature of economic thinking . . . Too large a proportion of recent "mathematical" economics are mere concoctions, as imprecise as the initial assumptions on which they rest, which allow the author to lose sight of the complexities and interdependencies of the real world in a maze of pretentious and unhelpful symbols."

Because I distinguish between economic theory as a series of propositional functions and economics as a body of knowledge, it seems to Schultz that my "frame of reference is different from that used by practically all economists." I was not aware of that, and it would make no difference if it were so. We desire truth, not conformity to mass opinion. If economists generally believe that economic theory is a statement of what reality "must" be, then it is just too bad for economic science. But Schultz himself does not seem to be certain how much faith to place in this view. He first denies that events can be different from the theory. Then a few pages later, he says that if they are different there are reasons, and cites four of them.¹¹ With this I agree. If events conform to a particular theory, there are reasons; if they do not conform, there are also reasons. We stated these in the monographs in either case.

However, for the purpose of clarifying the frame of reference used, I should like to cite references to at least two economists who have discussed in enlightening fashion the difference between economics as a tool and as knowledge.

Alfred Marshall in his Inaugural Lecture at Cambridge¹² said: "[Economic theory] is not a body of concrete truth, but an engine for the discovery of truth."

More recently, Professor Frank H. Knight has greatly modified even this view. In referring to what is termed "pure theory" he says:

"The notion that economics is a science explanatory of actual behavior is the most important single confusion in the methodology of the science."¹³

¹¹ P. 828.

¹² Cited in *The Memorials*, p. 34.

¹³ Frank H. Knight, *The Ethics of Competition*, p. 279. See also J. S. Mill Book III, Ch. I, ¶ 5.

These views are cited, not to "prove" anything, but merely to show that those who have studied economic methodology have arrived at the same conclusions that were forced upon us when we undertook a concrete investigation. We found that economic theory was a series of propositional functions whose terms were not invariable entities. We therefore had no choice except to analyze events under this assumption. If, however, anyone can find the facts by some other method, be it by deductions from assumptions, by intuition, or by communion with the transcendental ego, he is welcome to do so. We, however, lay no claim to these metaphysical powers.

IV

Schultz still insists that the differential must be equal to the duty. We found evidence to the contrary. To prove his point he says that the cost to the importer is his price plus the duty. This is obviously true, and to controvert it would be to deny the propositions of arithmetic. If the problem of ascertaining the tariff differential consisting of adding together the tariffs and the prices paid by importers, it would be quite simple. What we want to know, however, is whether the prices of all goods of the same grade, including those domestically produced always average higher in the domestic than the foreign market by the amount of the duty? That is what I mean by the differential. Now they would so average if there were perfect knowledge of markets, and perfect competition. This is approximated in the case of sugar. Where it did not happen, it was pointed out.

In the case of butter, where imports were only slight, it was shown that in effect that the United States was virtually on a domestic basis and that butter prices were created in two separate markets. The situation resembled at times one of complete embargo. We saw no reason for rejecting the evidence of our senses by refusing to admit the facts simply because of a blind faith in an exact type of marginal theory. It was admitted that if proper assumptions are made it can be deduced that when there is an importation of one ounce of butter, with "officers diligently enforcing the law," the prices of butter throughout the United States must be above the foreign price by the amount of the duty. But it does not happen to be true that markets are so closely articulated.

•

The markets appear virtually independent, and the differential measures the height of the domestic over the foreign level. This differential is not equal to the duty. Butter is not generally conceded to be under monopoly control, though if one follows the hypotheses of monopolistic competition, every commodity which is different in any degree, or which anybody thinks is different, is a "differentiated" product. But what if it is? Is it still not true that the divergence between foreign and domestic price is a result of the duty? If we can then ascertain how much of this differential is due to the fall in the foreign and the rise in the domestic price, we have an analysis of true incidence. What the formula method of analysis does is to lead to a complete ignorance of these simple facts. For, if that method had been used without examining the actual differential, the only task would simply have been to see whether there were any imports. There were. We would then have taken the 12 cents duty and applied the formula, coming to rather absurd conclusions. If the duty had been \$1.00, the conclusions would have been just so much worse. But, of course, Schultz probably would not look upon empirical investigation as a waste of time in this instance. He looks upon it as a waste of time in the case of sugar because the investigation showed that an assumption was correct. From which I assume that we are supposed to derive the general principle that an investigation of the facts is worth while when it disproves an assumption, but it is not worth while if it proves the assumption. We do not, however, find it possible to operate on such a basis. Marshall urged the economist to be "greedy for facts." I see no reason why he need be blind to them.

In the case of butter it is easy to accept the hypothesis that the markets are not well articulated and that the tariff in fact actually created two separate markets. But in the case of wool the results are more puzzling.¹⁴ Experts and people in the trade were consulted, but could find nothing wrong with the classifications. There was no obvious monopoly. We hope that some one will be able to clarify this matter by further investigation of facts. It does no good to tell us that the facts must be wrong.

¹⁴ These I discussed in *JOURNAL OF FARM ECONOMICS*, XIX (No. 4), 849.

It should not be surprising that the articulation between markets in the United States and in the remainder of the world is not perfect. I do not think that this indicates that people are "irrational."¹⁵ They are not, of course, "perfect economic men" because it does not pay to be such. People are economic in their behavior only within limits, and those limits vary with different people and under varying circumstances. We generally assume that professionals watch markets more closely than consumers. But no one is perfectly "economic."¹⁶ At the time of this writing I verified general impressions by checking up on the price of several standard pieces of furniture made by the same company, of the same material, et cetera, and sold in two different stores in the City of Madison. Variations in prices were from 10 per cent to 25 per cent, and there is no tendency for competition to bring them together. I attribute it to "imperfect knowledge of the market." In the grocery stores there are obvious imperfections with which every one is familiar. Why should we be surprised then when we find them between the domestic and foreign markets?

Now, with commodities, as Knight as indicated, we may find it not worth while to spend our time acquiring "perfect knowledge" of the market. One might assume that in the case of bonds and stocks in which people make heavy investments and sometimes spend the savings of a life-time, they would make an effort to inform themselves. Yet, we find, for example, that on the same day the same concern sold to different people \$1,000 bonds of the same issue at all kinds of prices: for example, 97.13 and 43.25; 18 and 97.67; 94 and 71; 81 and 52; 37 and 91; 3 and 95,¹⁷ and so on, for hundreds of transactions.¹⁸ We find investors paying salesmen in the 90's for securities selling on the market below 10 at the same

¹⁵ JOURNAL OF FARM ECONOMICS, XLII, 634.

¹⁶ Knight's remarks on this point are cogent: "It is worth repeating that the notion of perfectly economic behaviour involves contradiction or antimony. It is essentially a concept of "limits" in something like the mathematical sense but at the limit the behaviour would cease altogether to be economic and would become decidedly the reverse; it is not "economical" to attempt to behave "economically!" (p. 281).

¹⁷ Hearings before a Subcommittee on Stock Exchange Practices of the Committee on Banking and Currency, United States Senate, Seventy-Second Congress, S. Res. 84 and S. Res. 239, Part 5. Pages 1710, 1711, and 1712.

¹⁸ *Ibid.*, pp. 1709-1725.

time. We attribute it to imperfect knowledge of the market. We should not deny that it exists.

V

I showed that the use of the formula method without an examination of the differential would lead to the conclusion that if one ton of sugar were imported the price of all the sugar in the world market would be forced down 20 per cent, assuming Schultz's elasticities and the actual consumption figures he used. Schultz says this is "bad statistics and worse economics." Why? Because he claims his data cannot be "extrapolated." I did not extrapolate them, but merely assumed a change in the source of the sugar consumed domestically. But even that is unimportant. We must distinguish between the logical structure of the formula and the data (quantities and elasticities) which are used in it. My analysis shows that the logical structure of the formula itself makes the elasticities unimportant and reduces the tariff problem to one of simple arithmetic. The significant thing is that the structure of the formula leads to the absurd results demonstrated, if you use it under the assumptions of marginalism. If you do not so use it, then you are left with the type of study contained in the monographs. Assume any elasticities that you please, find any volume of demand and supply, insert them into the formula under the assumption of the importation of only one unit, and the same absurd results are obtained.¹⁹ This is inevitable if the formula is used as Schultz uses it without ascertaining whether or not the markets are so closely articulated as assumed by strict adherence to the marginal theory.

I also demonstrated that the elasticities which take so much trouble to compute are practically without effect on the result. All that is needed in a practical every day use of the Pigou formula is to take the amount of the tariff and the size of the two markets and a conclusion can be arrived at in only a few minutes.²⁰ This reduces what appears at first glance a profound method to a simple problem in the multiplication of common fractions.

¹⁹ *Journal of Farm Economy*, XIX, 855.

²⁰ *Ibid.*, p. 856.

ECONOMIC RELATIONSHIPS OF PUBLIC LANDS AND PRIVATELY OWNED GRAZING LANDS IN THE WESTERN STATES

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THE use of the large areas of public lands in the eleven western states in a complementary association with privately owned lands for the production of livestock, has been the basis of many land economic problems and land policy questions. The objective of this discussion is to develop the background of certain of these problems and questions, and to point out the meaning of some of the alternative courses which may be followed in public land administration.

The Public Grazing Land Resource

The gross land area of the eleven western states is approximately 755 million acres, and of this some 460 million acres or 61 per cent is now in public ownership. Approximately 340 million acres, or 75 per cent of the public land, is now being used for at least a part of the year for grazing by livestock. The classification of this public land by type is approximately as follows:

TABLE 1. PUBLIC LAND AREAS AND USE FOR ELEVEN WESTERN STATES²

	Gross area (acres)	Usable for grazing (acres)
Public Domain remaining at time of enactment of Taylor Act	162,000,000	
Authorized for grazing districts		142,000,000
Public Domain withdrawn for stock driveways	10,000,000	10,000,000
Public Domain withdrawn for national parks, reclamation, etc.	39,000,000	
National forests	132,000,000	88,000,000
Indian reservations	50,000,000	39,000,000
State grant lands	42,000,000	36,000,000
State and county tax default lands	25,000,000	25,000,000
Totals	460,000,000	340,000,000

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² Data compiled as of March 1938, from various reports, etc.

The public domain withdrawal for stock driveway purposes preceded the passage of the Taylor Grazing Act in 1934, at which time there were some 162 million acres of "unreserved and unappropriated public land." The withdrawal made for the grazing districts now totals 110 million acres (as of March 1938). The extent of the tax default land is estimated from limited sample data for the states of Montana, Wyoming, Colorado, and New Mexico. This land may all be classed as grazing land, although much of it has but little present value for that use. The ownership status of tax default lands varies with differences in state laws and administrative procedure.

The lands which until recently have been known as the public domain have been used by farm and ranch operators as "open range." The season of use has been the winter months, the spring and fall months, and in some localities yearlong, for both cattle and sheep. The grazing lands on the national forests are used principally from two to five months during the summer season, but there are some national forest ranges in the intermountain and southwestern states where the grazing season is yearlong.

The livestock are trailed from ranches to the seasonal ranges on the national forests and the grazing districts, and in some cases this trail movement is for a distance of as much as two hundred miles. In some localities the private ownership of ranch hay land and grazing land is quite small, and the livestock are trailed between the areas of different seasonal use on the public lands. This is not generally typical of stock ranch operations, however, most of which, with the exception of certain districts, own irrigated hay lands along the stream bottoms, and adjacent range lands, which are related in use to the seasonal grazing on the public lands. The farm livestock in the irrigated farming districts that make use of public lands do not as a rule move any great distance to range.

Organization for Management

There are now some 110 national forest administrative units in the eleven western states, varying in size (gross area) from 540,000 to 2,600,000 acres of land. Most of these are now carrying livestock.

The permits to graze livestock on the national forests are issued to the owners of stock ranches and farms rather than to the property, but rest upon an appraisal of the relative ability of the farm and ranch operations to make economic use of the public land resource. This appraisal takes into account the different types of farm and ranch operations and uses of land in determining relative need for the summer range of the forests in "rounding out" the organization of ranches and affording a balanced use of different kinds of lands. This is consequently a land-use planning approach, in contrast with the alternative of making leases on a competitive bid basis. The rates charged for national forest grazing permits are less than competitive prices on the privately owned range lands, and the use of the national forests for livestock grazing is regarded as a renewable "privilege," in contrast with the philosophy of such use being a "right" attaching to private land ownership. This philosophy of "grazing rights" is evidently emerging in the administration of the grazing districts organized under the Taylor Act, since the permits are issued to the ranch property. A land-use planning approach somewhat similar to that used on the national forests is now being used in the distribution of grazing to the users on the grazing districts. However, the past pattern of use which developed under the open range period of the public domain cannot be changed too rapidly, so that "use priority" is an important factor at present in planning for individual use. The stock ranch operations which in the past have used public domain are being classified as to the livestock maintenance capacity of the ranch property owned, and as to the economic dependency of this property upon the use of the public land in the grazing district which has been organized. There are now some fifty of these districts organized, ranging in size (gross area) from 171,000 to 13,500,000 acres, and the public land in them ranging from 21,000 to 8,800,000 acres. Due to the seasonal character of the use of the grazing district lands and the national forest grazing lands, there is necessarily a land use inter-relationship between them.

The Indian Reservations are of some importance in all of the eleven western states excepting California, Colorado, and Nevada. They are used in varying degrees for the graz-

ing of Indian-owned livestock, and, through grazing lease, by stock ranch operators who own ranch property within or near the reservations. These leases are established through a competitive bid procedure in contrast to the procedure evolved in the administration of the national forests. This procedure of competitive bid for lease has evidently afforded the basis for many of the very large range livestock operations in the western states.

The state grant lands were originally sections 16 and 36 (some states also 2 and 32) for each township. Much of the state grant lands suitable for dry-farm use has been sold by the states into private ownership, particularly the lands in the plains region of Montana, Wyoming, Colorado, and New Mexico. The statutory requirement of a minimum sale price per acre for the sale of state lands by certain states has prevented the larger part of this land that is suitable only for grazing from moving into private ownership. The state grazing land is handled by the state land offices and is used for grazing through lease to stock ranch and farm operators. The extent to which this land is leased fluctuates a great deal from year to year.

Tax default lands are widely distributed through the plains states and are of some importance in parts of the Intermountain and the Pacific Northwest states. These lands are generally the abandoned homesteads and absentee-owned lands, and as an average, approximately 50 per cent of their area has at some time been in cultivation. The privately owned cut-over timber lands make up an appreciable percentage of the tax default lands in some parts of the Pacific Coast states. The status of these tax default lands varies with different state laws. As a rule, they must be held for resale to private ownership, though in some states if not sold for taxes they may be leased to individual users. In one state these lands may be leased for a term of five years to cooperative grazing associations organized under a state enabling act. These associations undertake to lease all of the various classes of land ownership of a district, and work out an area management and use plan.

With the exception of the Great Plains sections of Montana, Wyoming, and Colorado and New Mexico and the

large desert areas of the intermountain states, the national forest areas are widely distributed through the western states. These as a rule are the mountainous areas that have wild-life, timber, watershed, and recreational values in addition to values for livestock production. The public domain lands are of importance in certain parts of the plains, and are of especial importance to livestock grazing in Nevada, New Mexico, Arizona, Utah, western Wyoming and Colorado, southern Idaho, and southeastern Oregon. This land forms a high percentage of the land area of the first four states named above.

*Relation of Privately Owned Lands
to Public Lands*

In contrast with the large acreage of 340 million acres of public land useable for grazing in the eleven western states, the 1935 census shows a total of only 177 million acres of "pasture land in farms" which constitute the private range lands. Various estimates indicate that this area of private land ownership has about twice the livestock grazing capacity of the total area of the public lands. This relationship varies a great deal in different localities, however.

From the land-use standpoint, the importance of the public land throughout these public land states is more than this carrying capacity relationship indicates. There are areas where the only land adapted for summer use is on the national forest, the ranch properties consisting of the irrigated hay lands in the valleys and the adjacent hill ranges, on which the forage and water conditions are best suited for spring and fall use. There are other areas where the production of feed crops for winter use is costly, and the desert ranges of the "public domain" furnish the winter feed. Because of lack of water in any but the winter months, much of this land cannot be used at any other season. The Indian reservation lands are not generally as restricted in their season of use as are the high summer ranges of the national forests, or the lowland desert and semidesert ranges of the grazing districts. The season of use of the Indian lands is yearlong in the southwestern states and in some parts of the Rocky Mountain and Intermountain states.

The 1930 farm census data show a total of approximately 500,000 farms for the eleven western states. Of these there were 335,000 reporting cattle, and 67,000 reporting sheep. An estimate of farms reporting both cattle and sheep would indicate that about 350,000 farms of all types are maintaining a class of livestock that, because of the wide distribution of public lands, are present or potential users of these lands. This is equal to 70 per cent of the total number of farms. There are of course farming sections where there is but little public land within reach of the farms that maintain cattle or sheep, and other areas where large numbers of farms have small livestock permits on the national forest and grazing district lands.

The farm census data show some 38,500 stock ranches and 21,000 animal specialty farms. Many of the latter are essentially stock ranches, but their use of open range placed them within the census definition of animal specialty farms rather than stock ranches. The stock ranches and animal specialty farms are generally better situated than the other types of farms for making use of the public lands and fitting such use into an organization with private land ownership.

There are now approximately 26,000 livestock permittees on the national forests, 18,000 licensees on the grazing districts, and 6,000 Indian grazing lessees, or a total of 50,000 public land users. There is some duplication in this figure, and it does not include an unknown number of the users of the public domain that is not yet organized into grazing districts. Neither does this include the other open range users of the "new public domain" areas of land abandonment.

This figure of 50,000 known users of the public lands amounts to only 10 per cent of the total number of "farms," but compares rather closely with the number of stock ranches and animal specialty farms. The fact that it is predominantly the livestock from stock ranches rather than the farm livestock that are now using the public lands is indicated by comparing this percentage of the total number of "farms" using the public land with the percentage of total livestock numbers that are maintained on the public land for some part of the year.

The 1935 census reported approximately 11 million head

of cattle and 23 million head of sheep for the eleven western states, and at the rate of five head of sheep to one head of cattle, this equals an animal-unit population for cattle and sheep of approximately 16 millions. In 1937 there were approximately 2,630,000 animal units of cattle and sheep using the national forests of these states, 2,504,000 animal units on the grazing districts, and 815,000 on the Indian reservations. These equal 6 million animal units, or 38 per cent of the total cattle and sheep population of 16 million units. There is some duplication in this figure of number of livestock using the public land, due to the use of different types of land by the same livestock, but this may be offset by the unenumerated users of public land. The indications are that about 15 per cent of the 350,000 farms reporting cattle and sheep are users of public land, but that 35 per cent or more of the sheep and cattle graze on public land for at least a part of the year.

With this background picture of land resources and their present place in western livestock production, let us consider some of the alternatives which may be followed in the future use and management of the public lands.

*Should the Public Lands be Used at All for
the Production of Livestock?*

These lands are now an integral part of the maintenance of probably 30 per cent of the sheep numbers and 6 per cent of the cattle numbers of the United States. In addition to livestock, grazing, they have values in varying degrees for other uses such as recreation, wildlife, timber, and watersheds. All of these may frequently be fitted into a pattern of multiple use without serious conflict of uses.

The future trends of production adjustment in the central states and in parts of the southern states, as a result of disappearance of certain export markets, may result in the maintenance of considerably more farm livestock on pastures in these regions. Likely this would include both cattle and sheep, but, due to climate and farm organization factors, probably the former much more than the latter. The competitive strength of the western cattle producer lies in low feed and labor costs, and in a specialized type of operation

which can produce young feeder livestock of a uniform age and quality.

Although the public lands furnish probably less than one-third of the total livestock carrying capacity of the eleven western states, the withdrawal of these lands from this type of use would, due to their relationship to the use of other lands, probably reduce cattle and sheep numbers more than proportionally. This would be especially true of sheep, where, due to the importance of seasonal uses of the public lands, the withdrawal of such lands might bring about a reduction of one-half or more in the numbers for these states. This would be a severe adjustment in the agricultural economy of most of the western states, and would probably mean a greatly increased national dependence upon wool imports. The change in cattle numbers which would result, while it would be very important in localities, might not be significant nationally.

There are certain areas where the use of public lands for livestock maintenance may not be compatible with the best interests of society, and there may be lands now in private ownership that will prove to be of higher value in the future if put to a different use—a use requiring public ownership. Examples of conditions illustrating the latter are the shortage of winter range for elk on the national forests, and the existence of certain watershed lands where erosion and flood potentials are so high that grazing cannot be justified. Competition of other uses on most of the range lands probably will not require any serious change in the present use of lands now in public ownership.

*What Will Be the Level of Use and the Conservation
Practices Applied to the Public Lands if They Are
to Continue to Support Livestock for an
Indefinite Time in the Future?*

The conservation of the grazing lands in public ownership is linked with conservation on the private lands. Since the private lands represent a high percentage of the total carrying capacity, any excesses and mismanagement of the private lands will result in pressure for overuse and improper seasonal use of the public lands. There have undoubtedly been

periodic excesses in the use of the western range lands, both public and private. These excesses have probably resulted from unseasonal uses of lands, and other management deficiencies, as well as from a too large livestock population.

The recent high point of livestock numbers which was reached in the range states in 1934 and 1935 has been estimated by various observers to have been 20 to 50 per cent above the combined capacity of the total range resource and feed production. The same agencies have estimated that with proper rate of stocking and scientific management the western forage resource could in time be made to support a livestock population 20 to 30 per cent in excess of the recent peak numbers.

A policy of adjustment of livestock numbers on the range land resource, with the objective of eventual restoration of good range conditions would, according to the best information available, require that the livestock numbers on the range be maintained at about 70 per cent of what they were in 1935. This is, of course, speaking in terms of regional generalities. Results of the Cooperative Western Range Survey indicate that some communities can carry only about one-half of their average range livestock numbers of the past ten years if they are to rehabilitate their resource. This implies drastic changes in the future economy of such communities.

How Should Grazing on Public Lands Be Integrated With the Use of the Privately Owned Lands?

In nearly all of the range livestock regions there is a management and utilization relationship between the types of lands that are in private ownership and the public lands. This relationship is often on the basis of definite areas; that is, there are natural and economic boundaries which form "use units" of public and private lands. For efficient public land management, there appears to be a need for considerable further analysis of the factors that determine such areas.

As a basis for analysis of the problem, an area land-use planning approach to the use of public lands for grazing by the farms and ranches would establish, for the area, the capacity of the public land and of the privately owned feed

crop and grazing land. This approach would also analyze the probable results, in terms of land use, if each ranch and farm operation were to receive a proportionate share of the public land capacity as determined by the percentage of the private land capacity of the area represented by each ranch and farm operation.

This area analysis would then need to be modified by a farm management study which would give the organization and management differences of the various ranches and farms. In some areas there is no economic use for the private lands except for the maintenance of livestock, while in other areas, alternative uses exist in varying degree. A farm management study might group the farms and ranches of the area into several classes, based upon the relative dependency of farms and ranches upon public land use, and upon the land-use alternatives of farms for purposes other than livestock maintenance. This result would again need to be modified by social considerations, such as accomplishing a wider distribution of the use of public land, particularly to the smaller, family-sized operations, than would result from a land use and farm economics approach. There may, however, be management obstacles in the way of the use of the public land by some of the ranch and farm units that are given a rating by this method of analysis. This procedure does, however, furnish a pattern from which public land administration can work better than by a strictly empirical approach.

In the past the approach used has been largely an empirical one. There has been a more or less formal concept of areas in the idea of dependency zones around a body of public land. The ranch "set-up" of applicants for public grazing has been analyzed as to the need for grazing outside of the ranch lands, and the ability of the farm or ranch unit to make good use of the public land has been considered. But until recently there has been no formalized area analysis such as might give a clearer concept of the economic and social principles involved, and furnish the detail pattern from which administration can work.

A greatly different method in determining a basis for the administration of the public lands would be to lease them to

users through competitive bid. The laissez faire concept of economic organization would probably argue that leasing through competitive bid would give the most efficient use of the public lands and the best distribution to the different sizes and types of farm and ranch users.

*How Much Permanency Should Be Recognized
in the Preferences for Grazing
on Public Lands?*

One extreme view regarding the permanency of the grazing preferences would be to recognize the preferences as "rights" attaching to the ownership of private lands; the other would be to regard them only as a temporary privilege for the season for which issued. The main arguments for permanency are that it would contribute to the stability of ranch and farm operations, and would afford a long-time base for credit. If a policy of recognizing "rights" is accepted and the prices charged for public land grazing are below competitive rates, then a part of the value of the public land will be capitalized into the value of the private lands. This increased capitalization of the properties of national forest users has occurred to some extent even though "rights" have not been recognized. Users of the open range of the public domain (prior to the passage of the Taylor Act) probably followed this practice to a greater extent than users of the national forests. The result has been a high value for some ranch properties and privately owned grazing lands, based upon an uncertain future use of the public lands. Where this value has been capitalized into land indebtedness, it has induced inflexibility into the economy of some areas.

One of the principal arguments against the recognition of "rights" in the use of public lands for grazing is that more important social values may develop in the future that will require a liquidation of present uses. Another argument adverse to recognizing "rights" is that the administrative problems become very complex because private land holdings are being constantly divided, combined, impaired, and improved.

The safest policy has proved to be to avoid a recognition

of any permanent rights based on public-private land-use relationships, but to protect users against any rapid or extreme changes in their public land uses.

If it is considered that a body of public land has no potential use other than grazing and that adjustments in numbers of livestock will not be necessary for conservation purposes, a policy of recognition of "rights" might be desirable. Even in this case, it would appear to be especially desirable to avoid the "freezing" of such rights at the inception of public land management, when prior use history looms large in determining the individual farm and ranch preferences. "Prior use" is often difficult to determine authentically, and preferences based upon it are likely to be unsound from the standpoint of economic land-use relationships.

*Should Competitive Prices be Charged for the Use
of Grazing Lands in Public Ownership?*

An historical study of the land charge for livestock grazing on privately owned lands³ indicates that under reasonably competitive conditions, and barring extreme fluctuations in general price levels, the land charge for western range livestock operations has generally come within the range of 30 cents to 40 cents a head per month for cattle, and 6 cents to 10 cents a head per month for sheep.

Under a price situation of 6 cents to 7 cents a pound for steers and lambs, and 25 cents a pound for wool (farm prices), such as went into the budgetary calculations from which the preceding land charges were derived, the present method of calculating grazing fees for the national forests would result in a charge of 13 cents to 16 cents a head per month for cattle and 4 cents to 5 cents a head per month for sheep. The lease rates on Indian lands, where open to competitive bid, resulted in a land charge as high as 15 cents a sheep-month and 75 cents a cow-month in 1930. The present charge on the grazing districts is 5 cents a head per month for cattle and 1 cent a head per month for sheep (does not include lambs, or cattle under six months of age). Prior to the withdrawal of the public domain for the organization of grazing districts

³ *A Method for the Valuation of Ranch Properties and Grazing Lands*, Montana Agricultural Experiment Station, Mimeographed Circular No. 6.

under the Taylor Act, this land was used as open range and without any charge.

An analysis of the historical trend of stock ranch operating costs and income under widely varying price situations indicates that the "economic rent" available to sustain a land charge has varied from a point of zero when the ranch prices for beef and lambs fall below 4 cents a pound, with comparable prices of 12 cents a pound for wool, to as high as \$1.00 a head per month for cattle and 20 cents a sheep-month when prices rise to 10 cents a pound for steers and lambs, and 35 to 40 cents a pound for wool.

This indicates a severe strain on the financial management of the larger stock ranches when a considerable percentage of the land is owned and the charge upon it is a fixed amount in interest on land indebtedness and land taxes. A policy of charging much less than competitive rates for the use of public lands may be compatible with a policy of temporary use of such lands. But if permanent "rights" are to be recognized, a charge of less than full value will result in the capitalization of the "dividend" from the public lands into the value of the private lands. This means the forming of a capital structure on the privately owned lands that will be a handicap in meeting livestock price fluctuations, in comparison with a charge of full competitive rates on a sliding scale for the use of the public land.

There are several other related and pertinent questions in the use and management of these public-owned lands on which we will not undertake discussion. Among these are, "To what extent should conservation on the private lands be a condition for admission to use of the public lands?" "To what extent should public land users be expected to own the privately owned lands which they use?" "To what degree should public ownership be extended to range lands now in private ownership, from the viewpoint of resource conservation?"

The economics of western range livestock production rests upon public land policy and management, probably to a greater extent than any other type of agricultural production in these states or other regions of the United States.

NOTES

A SPECIAL CASE CONSUMPTION-RATIO FORMULA FOR THE DETERMINATION OF A LIMIT ON THE PRICE INCIDENCE OF A DUTY

There is one type of special case, which is probably fairly common, in which the price incidence of a change in a duty can be determined within certain limits without knowing the actual values of the elasticities of demand and supply in the domestic and foreign markets which are required for the formal application of the equilibrium formula given by Schultz for determining the effects of a duty.¹ This special case is one in which there is no production in the duty-laying country of the dutiable article. The formula, therefore, cannot be applied to a duty such as the United States duty on sugar because the United States both produces and imports sugar. The formula applies to all purely revenue duties such as a United States duty on coffee would be. In addition, the formula may be applied in certain cases to the duty on an imported product that competes to only a limited extent with a product in the duty-laying country. For instance, the formula can probably be applied to the estimation of the effect of the United States duty on long-staple cotton on the price of imported Egyptian Uppers cotton. The special case also requires that there would be imports with or without the duty and therefore assumes that the price in the duty-laying country would, in either case, be higher than in the foreign country. The only requirement involving any of the elasticities of the three schedules (since there is no production in this country, no domestic supply schedule is involved) is that the elasticity of the domestic demand must not be greater than the elasticity of the foreign demand. Finally, in order for this consumption-ratio formula to apply unqualifiedly both to the effect of an increase and to the effect of a decrease in the duty, it is necessary that all the schedules be linear throughout the range within which prices are likely to move as a result of the change in the duty.

In the above special case it follows directly from Schultz's equilibrium formula for determining the effects of a duty that: When

¹ The formula referred to is formula No. 9 in the article by Henry Schultz entitled "Correct and Incorrect Methods of Determining the Effectiveness of the Tariff." *JOURNAL OF FARM ECONOMICS*, November 1935.

a change in a duty is made, the price of the dutiable article in the duty-laying country will change by a fraction of the change in the duty which is *greater* than that fraction which is obtained by dividing the foreign consumption by the total world consumption. Or, if x_{df} and x_{dw} represent the foreign and world consumption, respectively, and Δy_d represents the change in the price in the duty-laying country associated with a change ΔT in the tariff, then

$$\frac{\Delta y_d}{\Delta T} > \frac{x_{df}}{x_{dw}}. \quad (1)$$

Although one might intuitively expect an approximate relation of this type, it can be rigorously demonstrated that, under the conditions described above, it must hold true. The proof is simple and can be deduced from a slight modification of Schultz's² formula number (9).

We write:

$$\Delta y_d = \frac{y_d}{y_f} \frac{\eta_f x_{df} - e_f x_{sf}}{\eta_f x_{df} - e_f x_{sf} + \eta_d x_{dd} - e_d x_{sd}} \Delta T \quad (2)$$

in which all quantities refer to initial conditions before the change ΔT in the tariff is made. For ease of reference the quantities associated with the duty-laying country will be classified as domestic and those with the country from which imports are received, as foreign. Then y_f is the foreign price, η_d and η_f the elasticities of domestic and foreign demand at the quantities x_{dd} and x_{df} , and e_d and e_f the elasticities of domestic and foreign supply at the quantities x_{sd} and x_{sf} . Comparison of equation (2) with Schultz's equation (9) will show that transportation and other items causing a differential between y_d and y_f have not been abstracted from in writing equation (2). Equation (2) therefore may be used to represent an equilibrium condition with or without a tariff already in effect.

Under the conditions of the special case treated in this note, $e_d = 0$. To simplify the proof of inequality (1), it will first be assumed that e_f is also equal to zero and then later remove this restriction. With $e_d = e_f = 0$, equation (2) becomes, after an obvious rearrangement,

$$\frac{\Delta y_d}{\Delta T} = \frac{1}{1 + \left(\frac{y_f}{y_d} \frac{\eta_d}{\eta_f} \right) \left(\frac{x_{dd}}{x_{df}} \right)}. \quad (2')$$

² *Ibid.*

Now the inequality in (1) may also be written

$$\frac{\Delta y_d}{\Delta T} > \left(\frac{x_{df}}{x_{df} + x_{dd}} = \frac{1}{1 + \frac{x_{dd}}{x_{df}}} \right) \quad (1')$$

since $x_{df} + x_{dd}$ equals total world consumption. By comparing (1') with (2') it is readily seen that if the expression $\left(\frac{y_f}{y_d} \frac{\eta_d}{\eta_f} \right)$ is less than unity, then

$$\frac{\Delta y_d}{\Delta T} > \frac{1}{1 + \frac{x_{dd}}{x_{df}}}.$$

Since y_f is never greater than y_d , and η_d was assumed less than η_f this condition is fulfilled and (1) is true for $e_d = e_f = 0$.

Now if $e_f \neq 0$, eq. (2') becomes

$$\frac{\Delta y_d}{\Delta T} = \frac{1}{1 + \frac{y_f}{y_d} \frac{\eta_d x_{dd}}{\eta_f x_{df} - e_f x_{sf}}} \quad (2'')$$

Since positively sloping supply curves are assumed hence if e_f is different from 0 it will be a positive quantity, and since η_d and η_f are both negative, any value of e_f different from zero will make (2'') greater than (2'). Hence, equation (1) holds for the special case here considered.

The assumption regarding the linearity of the demand and supply schedules over the range within which prices are likely to move, can be dispensed with for certain special cases. For instance, if one or more of the schedules are concave upward (y being the ordinate to the curve) and the others linear, formula (1) can also be used to determine the limit of the price effect of an increase in the duty. For the effects of a decrease in duty when the schedules are non-linear, formula (1) does not, in general, hold true.

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JOINT STOCK LAND BANKS IN RETROSPECT

About twenty years ago under the terms of the Federal Farm Loan Act of 1916 a new type of banking institution, the joint stock land banks, was created to make long term mortgage loans to farmers. From 1917 to 1933 these banks engaged in the farm mortgage business under Federal supervision. The Emergency Farm Mortgage Act of 1933 prohibited them from issuing tax exempt bonds or from making further mortgage loans except to refinance existing loans. The passage of this legislation made it impossible for them to continue operations and all of them are, therefore, in process of liquidation. This study will give reasons why these banks were created, sketch a brief history of their operations, show why they are being discontinued, and describe the progress which has been made toward their complete liquidation.

When the Federal Farm Loan Act was pending there were two points of view with respect to the proper type of mortgage system to create in the United States. A large group of Congressmen supported by important farm groups favored cooperatively owned and government supervised banks. From the ideas of this combination developed the Federal land banks. Other influential farm leaders favored a system in which privately owned banks would be incorporated by the Federal government on much the same basis as national banks and the outgrowth of this was the joint stock land banks.

The Federal land banks were expected to serve the smaller borrowers who were cooperatively minded, while the joint stock land banks would serve the larger borrowers and those who desired to keep their financial affairs private. The average size joint stock land bank loan outstanding as of December 31, 1929, was approximately \$6,044, while the average loan outstanding for Federal land banks as of the same date was \$2,925, showing that the joint stock land banks had obtained larger loans. Undoubtedly many who obtained loans favored the joint stock land banks because their affairs would be confidentially treated, but there is no method of estimating how many did so for this reason.

There was also an attempt to appease mortgage companies who were opposed to the measure. It was hoped that a large number of these companies would take out charters as joint stock land banks but not many did so. The reasons given for not taking out charters

involved problems of capital requirements, supervision and interest rates.

Since there was some doubt as to whether a cooperative agricultural credit system would succeed in the United States, it was thought that the joint stock land banks would offer an alternative source of credit.

The major reason for the provision for joint stock land banks in the Federal Farm Loan Act, however, was that it was politically expedient to pass some type of agricultural credit measure and it was impossible to pass the bill setting up Federal land banks without including joint stock land banks.

The liquidation of the joint stock land banks puts an end to the dual system and closes an interesting chapter in Federal regulation of farm mortgage credit. Most of the readers of the JOURNAL are already familiar with the major features of the legislation regarding joint stock land banks so that a complete analysis of the law is unnecessary.

The joint stock land banks were chartered by the Federal Farm Loan Board and were required to have a subscribed capital of at least \$250,000. The capital stock was privately subscribed, the Federal government being prohibited from owning any stock in these banks. Bonds, secured by mortgages, were issued, the maximum issue being limited to fifteen times the capital and surplus of the bank. The bonds were not in any sense government guaranteed but were held to be instrumentalities of the Federal government and, therefore, exempt from taxation. The loans were restricted to first mortgages on farm land. The ratio of the amount of the mortgage to the value of the land was 50 per cent, and 20 per cent of the value of the permanent insured improvements. Loans were made on an amortized basis and could be made for a period up to forty years. The maximum interest rate was 6 per cent and the spread between the rate of interest on bonds and the rate of interest on mortgages would not exceed one per cent. In these respects the loans were similar to those made by the Federal land banks.

The Federal land bank loans were restricted to the district in which the land bank is located, while those of the joint stock land banks were confined to the state in which the head office was located and one contiguous state. In some instances joint stock land bank loans covered a larger area because when banks merged they were permitted to retain the loans outstanding, even if the

loaning area of the two consolidating institutions was broader than two states. All loans were subject to approval by appraisers appointed by the Federal Farm Loan Board.

There was no specific limitation in the law on the amount which could be loaned to any one borrower, but the Board early ruled "that a joint stock land bank may not make a loan to any one borrower in excess of 15 per cent of its capital stock, nor in any event in excess of \$50,000." The joint stock land banks were subject to supervision and examination by the Federal Farm Loan Board and thereby held to certain restrictions.

The first joint stock land bank to be organized was chartered on April 24, 1917. Altogether eighty-five banks were chartered from the time the Farm Loan Act was passed until the banks were placed in liquidation by the Emergency Farm Mortgage Act of 1933. The maximum number active at any one time was at the end of 1923 when seventy were in operation. When the Emergency Farm Mortgage Act of 1933 was passed, this number had been reduced to forty-six, not including those in receivership.

Mergers, voluntary liquidation and failures accounted for the decline in number. By March 31, 1938, thirty-eight were in operation, three were in voluntary liquidation and six were in receivership.

In order to handle their farm loan business many commercial banks organized joint stock land banks as affiliates. The entire capital stock of the California Joint Stock Land Bank of San Francisco is owned by Transamerica General Holding Company; the First Montgomery Joint Stock Land Bank, Montgomery, Alabama, is controlled by the First National Bank, Montgomery; the First Trust Joint Stock Land Bank, Chicago, is owned by the First Chicago Corporation, which also controls the First National Bank of Chicago. Many more examples could be cited. These banks have, in the main, had a successful history.

The greatest lending activity of the banks was during the years 1922, 1923, 1925 and 1926, their loans amounting to over \$100,000,000 in each of these years. The peak year was 1923 when loans amounted to approximately \$190,000,000. A large number of the loans made by these banks were made in the states of Iowa, Illinois, Indiana and Ohio. Loans closed in these four states from organization to December 31, 1929, amounted to more than one-third of the total loans closed.

Joint stock land banks sold their bonds directly or through banks with which they were affiliated. The unfavorable bond market during the latter part of 1923 caused many joint stock land banks to limit lending operations. Following the receiverships of three of the banks in 1927 the market for all joint stock land bank bonds became disorganized and grew much worse with the depression beginning in 1929. At the time of the enactment of the Emergency Farm Mortgage Act, bond obligations of the joint stock land banks were trading in over-the-counter markets at prices averaging slightly below 47.5 (par 100). Many of the banks took advantage of conditions to purchase bonds at the heavy discount prevailing. The Des Moines Joint Stock Land Bank, for example, purchased four million dollars par value of its own bonds at thirty-five per cent of par. A total of \$33,770,000 worth of bonds was retired in 1932 by all of the banks, most of the bonds were purchased in the market.

Many of the banks have made profits. All of the banks in operation December 31, 1932 had declared dividends during their history except the First Trust Joint Stock Land Bank of Chicago (chartered 1922) which was owned by the First Chicago Corporation. This bank, in line with sound banking practice, had been building up a surplus.

One bank, Iowa of Sioux City, Iowa, has paid more than one hundred per cent in dividends, four have paid between 75 and 100 per cent, California of San Francisco, Dallas of Dallas, Texas, Illinois of Monticello, Illinois, and Lincoln of Lincoln, Nebraska; six have paid between 50 and 75 per cent and seven have paid between 40 and 50 per cent.

No joint stock land bank failed during the first decade after the Farm Loan Act was passed. Then in 1927 three were placed in receivership. These receiverships focused attention upon the abuses in the system which were the result of the failure of the Farm Loan Bureau to keep pace with the rapid growth of the banks. These early failures were largely the result of dishonesty and mismanagement. Promoters, who were more interested in selling stocks and bonds of these banks than they were in the establishment of sound institutions, gained control of a number of the larger banks. As a result, several of the banks got into difficulties. The publicity given to the failure of some of the banks reacted unfavorably on the sounder banks. Since 1927, six more banks have been placed in receivership.

Most of the banks which were soundly managed, however, made satisfactory progress until the depression of 1929. When the government came to the aid of the Federal land banks with \$125,000,000 capital in 1932, no provision was made for the joint stock land banks. Under Section 5, however, of the Reconstruction Finance Corporation Act, loans could be made to the joint stock land banks. The banks borrowed under this provision \$17,979,621 from February 2, 1932 to December 31, 1937; on the latter date all but \$2,027,211 had been repaid. This aid was not sufficient, as all of these banks experienced very heavy increase in delinquencies, in foreclosures, and in real estate holdings. Because of existing conditions, joint stock land banks were anxious to have their problem solved, many of them being in favor of a plan for liquidation. The passage of the Emergency Farm Mortgage Act was held back until a way could be found to bring this about. The Emergency Farm Mortgage Act (May 12, 1933) definitely provided for the orderly liquidation of the joint stock land banks by denying them the privilege of issuing tax exempt bonds or of making further mortgage loans except those necessary in refinancing of existing mortgages or bond issues or for the sale of real estate owned or later acquired by the bank.

There has been a wide variation in the extent of this liquidation. As of December 31, 1937 nine banks had liquidated one-half of their assets, twenty-four had liquidated 50 to 75 per cent and the remaining eight had liquidated 75 per cent or more of the assets held on May 1, 1933.

Approximately eighty per cent of the loans sold or refinanced by the joint stock land banks during the period of liquidation have been acquired by the Federal land banks and Land Bank Commissioner and the remainder by other agencies, such as insurance companies and commercial banks.

Bond prices have reflected the satisfactory liquidation of these banks. Several of the banks have called all or a portion of their bonds at par and accrued interest. Bondholders will lose little, if anything, in the case of most of these bonds. A number of the banks have refunded their bonds at lower rates of interest. Eleven banks have refunded bonds at 3 per cent while one has refunded at 2 per cent. Most of the loans bear 6 per cent so that banks which have refunded their bonds at considerably lower rates of interest have a very nice spread between the bond rate and the loan rate. These banks are making money during the liquidation period and

are in no hurry to go out of business. Even in the case of receiverships bondholders have made a fairly good recovery. In receiverships the stockholders have lost all of their investments and are subject to double liability. In the case of the banks which have avoided receivership, stockholders will not lose a large amount, particularly when it is considered that many of them have received very good dividends in the past.

Robinson and Company, bond dealers of Chicago, in connection with recovery by both bondholders and stockholders, made the following statement:

"With the passage of the Emergency Farm Mortgage Act of 1933, we expressed the opinion that all of the operating joint stock land banks would be able to liquidate their bond obligations in full. We have not changed our views.

In August, 1935, we called attention to the speculative possibilities of the shares of these banks.

We still hold that shareholders in the aggregate will realize par or more in liquidating dividends."¹

As indicated in the foregoing paragraph this gratifying result has been brought about principally through the refinancing of a great many of the mortgages of these banks by the Federal land banks aided by Land Bank Commissioner's loans.

It is difficult to determine the length of time required for the final liquidation of these banks. Most of the best assets have been disposed of. It has been estimated that it will take from five to ten years to liquidate the remainder.

The joint stock land banks operated on too small a margin of capital; the minimum amount of capital was \$250,000 and the bank was permitted to issue bonds up to fifteen times the capital and surplus. This margin of capital was too small an equity to operate successfully during a period of stress. Moreover, the government did not come to their aid but it could scarcely be expected to do so, because it favored extension of the cooperative plan of credit.

The period during which the banks operated was a most unsatisfactory one. Lending was suspended for nearly all of the year 1920 while the constitutionality of the act was being settled by the courts. This was followed by the agricultural depression of 1920

¹ Robinson & Company, "Concerning Joint Stock Land Banks," February 29, 1936. Page 36.

and 1921 with low agricultural prices. Agriculture had not fully recovered from this depression when the depression of 1929 began. It was almost impossible to build up surplus and reserves to weather such periods. The Federal land banks were also the victims of the same conditions but the government came to their aid so that they have been able to "weather the storm."

Unfortunately promoters organized many of the banks. These men were not only unfamiliar with sound mortgage practice but were not particularly interested in such practice. The promoter is helpful if he is associated with men of sound judgment but in many instances of the promotion of joint stock land banks this was not the case. Promoters were anxious to sell stock. Loans had to be made and bonds issued. There was, therefore, pressure placed on banks so organized to make loans in large volume, so that more stock could be sold, more loans made and more bonds issued—a vicious circle.

Competition with Federal land banks was at times keen and usually worked to the disadvantage of the joint stock land bank, for the interest rate of the Federal land banks was usually one-half to one per cent lower than the joint stock land banks. It is true that the borrower was required to take stock in a national farm loan association but for a number of years dividends were paid on this stock.

The spread of one per cent authorized by law between the interest on loans and the interest on bonds was insufficient for profitable operation, particularly when most of the banks had to pay a commission to their representative, usually a bank, for obtaining loans. As a matter of fact, between 1921 and 1923 many of the joint stock land banks sold bonds at 5.5 per cent, having a spread of only one-half per cent. The only way a joint stock land bank could operate profitably and build up reserves and surplus was to obtain large volume. As a result of the pressure for large volume many poor loans were made which later caused difficulties. The small spread tended also to curtail the flow of capital to these banks.

The receiverships of three of the banks in 1927 affected all of the banks unfavorably and it was difficult to sell their bonds. While it is true that each bank should have been judged on its own record, it was difficult for investors to distinguish between the sound and the unsound.

The banks were hemmed in on all sides by rules, regulations and red tape. A certain amount of this was necessary but the banks' operations were curtailed by such limitations as a maximum interest rate of 6 per cent to apply to all parts of the country, a restricted territory, and the like. The maximum interest should have been higher and there should have been no limitation of territory where loans could be made.

Until the reorganization of the Farm Loan Board in 1927 the joint stock land banks were not examined as frequently as the law required. The Farm Loan Act provided that the banks should be examined at least twice a year but in many cases banks were examined only once a year. The infrequent examination of joint stock land banks in the early part of the system was partly due to the fact that there was an insufficient number of government examiners. After 1923, however, the law was amended to provide for the assessment of the banks for these examinations, after which time this excuse could no longer be offered. The infrequency of examinations after that time was undoubtedly due to laxness on the part of the board.

At the outset there was an impression that the Federal Farm Loan Board was not sympathetic to the joint stock program. When the joint stock land banks began to compete actively with the Federal land banks the board raised the question in its 1922 report as to the wisdom of providing for a cooperative system of farm credits and at the same time making provision under the same supervision for profit making corporations to become the chief competitor of the cooperative system. The board raised the further question "of whether legislation should not be enacted to make the system ultimately entirely mutual."

It is undoubtedly true that the board was indifferent to the success of the joint stock land banks if not actually prejudiced against them. These banks have been referred to as the "step children of the Federal Farm Loan Board." However, when some of the joint stock land banks got into difficulties and several of them were placed in receivership the board began to exercise a most rigid supervision. A number of the banks objected to this, stating that it was interfering with the proper conduct of their business. The reason given for such strict supervision was that it was impossible to determine just who might be guilty of incorrect practice and until this could be determined close supervision was necessary.

While the joint stock land bank experiment did not work out satisfactorily the record is not bad, particularly in view of the handicaps suffered. Aside from the banks in receivership practically all of the bondholders will recover in full and many stockholders will lose little, if any, of their investments.

This experiment does not prove that private enterprise cannot function satisfactorily in this field. The banks which were soundly managed suffered because of the publicity given to the banks which were mismanaged. However, a number of the banks which were well managed did not get into serious difficulties. It might, therefore, be reasoned that with good management, sympathetic supervision, less stringent laws and restrictions, these banks might have succeeded. Farm mortgages have been one of the most stable securities in the history of our country. Practically all of our large insurance companies have made loans on farm mortgages and over a long period these mortgages have proved successful investments.

However, a mistake was made in setting up a dual system of long term credit for farmers. This situation has been corrected and the joint stock land banks will soon have passed into history. The elimination of these banks leaves the Federal land banks as the greatest single agricultural credit agency in the United States.

VICTOR W. BENNETT

Farm Credit Administration

HOW SHOULD FARM MANAGEMENT BE TAUGHT?

The chief difficulty with farm management teaching is finding a way to teach a young man how to manage a farm. Text books on the subject as well as teaching methods usually are weak on how to operate a farm. To be sure, any text book you pick up is filled with a generous supply of statistics to illustrate and substantiate statements describing the way farms are managed. But these statistics are too often averages that have a limited usefulness in the classroom. What we need in training the prospective farmer is something entirely different.

In brief, I have three suggestions: firstly, emphasizing vital farm management decisions, secondly, linking class discussions with laboratory farms, and thirdly, having students discuss their recommendations for laboratory farms with the operators of these farms.

Let me explain what I mean by the first point, more emphasis on vital decisions. Farm management can be a study and analysis of

data gathered by experiment station and government workers. As such, it is chiefly a research problem or a liberal arts study; a course in economic analysis or economic history. On the other hand, farm management can be literally a course in managing farms. It is this type that prospective farmers are most concerned in obtaining.

Not enough emphasis is being placed on important decisions the farm manager has to make. As it usually happens in teaching, the manager's decisions are tackled indirectly; and only those decisions are tackled for which ample data are available. In essence, however, farm management is a matter of decisions, the decision itself being the focusing point and the data relating to it a supplementary factor.

To make this clear, let us go through a list of the vital decisions included in farm management. For the young man who has chosen farming as his vocation, a major decision for him is what to produce, what type of farming to choose. To take an example from another field, when a young man has decided on medicine or on law as a life work, he still has a major decision to make in choosing, let us say, between surgery and general practice, or between criminal and corporation law. When the young man has chosen his type of farming, the question immediately arises as to where is the best location for the type selected. If he wants to raise truck crops, where is the best location for this type of farming?

A second vital decision is choice of a size of farm. This doesn't mean merely size in acres but, in addition, size in labor input, amount of livestock, or crop production. Here is an attractive problem because of its numerous variations. If dairying is the type of farming selected, farm management studies may be helpful in pointing out what has been the most profitable size of dairy farm in a given area. Whatever the answer provided by the research study, care must be exercised in its application. Have conditions changed, what particular abilities has the would-be operator, what peculiar characteristics has the farm in question? We must not lose sight of our objective, the choice of size by one of our students. We are not teaching that the most profitable dairy farm is 160 acres on the average; we are, on the contrary, teaching young men how to choose for themselves the most profitable size of dairy farm, a size which may or may not be 160 acres when "researchers" go out to rediscover it some years hence.

A third decision of importance is whether to buy or rent. Although our students may not run into this question for several years after they embark in farming, the fork in the road is nevertheless ahead of them to be met sooner or later.

What kind of a field layout represents the fourth decision. Of the four given, this is the least important. The fifth decision, one that must accompany the question of layout, is what cropping system to follow. This may not be strictly in farm management, you say, but rather in agronomy. On this point, the answer is clear, both are involved. Any factor bearing on the organization and operation of a farm is farm management, including many problems which are the principal concern of specialized fields such as soils, crops, animal husbandry and agricultural engineering. If the farm business is to be managed successfully however, a working together of all parts must be achieved. This is the job of a farm manager, not of an expert in one field such as crops.

Seven more vital decisions are waiting their turn, each one fully as important as the five already mentioned. They are: what kind of a livestock system to follow, how much and what kinds of machinery, what kind of power, how much labor, what kind of buildings, what records and how flexible a production program. You can suggest undoubtedly other decisions that should be on the list. Many of those on the list could be divided into several sub-questions. Nevertheless, these twelve issues are major problems of the farm manager. They represent vital decisions, the heart of farm management.

Now let us turn to the second phase, linking laboratory farms with the classroom.

In the first place, actual farms are not used as generally as they should be as laboratory equipment. This is unfortunate when their availability is considered. The large number of farms, surrounding almost every agricultural high school and land grant college, is a gold mine to the farm management teacher. In contrast, think of the difficulties some of the medical schools have in providing their students with sufficient medical patients, and think of the distance often separating forestry students and the forests.

Secondly, we should use laboratory farms as examples in the classroom. If the problem is an application of the principle of diminishing returns, take John Farmer's place as an example. Suppose he added four sows to the eight he has now. Would he make

more money? There is, in practical examples like this, the danger of becoming absorbed in John Farmer's plan and forgetting the diminishing returns principle. But there is more danger, in my estimation, of losing the battle if diminishing returns is not related to some concrete example.

And this brings us to the importance of principles. Of course, they should be emphasized. Case studies are well and good but only as laboratory material; they can illustrate principles but should not be ends in themselves. Principles should be recognized by students as tools to be used in solving new problems that arise. Since no two farms are alike, some common denominator is needed. This is the function of farm management principles.

The third of my suggestions is to have students prepare recommendations for laboratory farms and discuss them with farm operators.

In too many farm management classes the farms visited are not incorporated into the course as laboratory material. An hour is spent interviewing the farmer but that is all. To spend an hour on a farm is scarcely a beginning. Why not spend a day? Map the soil, measure the fields, study the layout, the rotation, the type of farming, in short go through the twelve major decisions. Have your students apply their classroom training and test their ideas on a concrete example. In this way the student will get the feel of making decisions; something of the thrill, I suppose, a young doctor gets in handling his first case.

In my experience a class of fifteen or more should have several laboratory farms. Probably as good procedure as any is to divide the class into groups or committees, each composed of four or five students assigned to one farm. The committee spends all of its time on this one farm. From time to time, progress reports of the committee can be given to the class as a whole and toward the end of the course recommendations should be given to the class. After the class has criticized the recommendations, the committee should take its report back to the farmer.

Discussion of the report with the farmer is a cardinal point. If the students know they are to present their suggestions to the farm operator, they are not only more thorough and careful in their suggestions, but also they are more likely to visualize the significance of vital decisions in management. In doing this they are putting

themselves in the shoes of the farmer and asking what should be done.

This procedure has an added advantage in the use it makes of farmers as teachers. The farmers on the laboratory farms can be particularly effective in asking questions. One such farmer comes to mind. He has three or four tough questions ready to fire at the students as soon as they arrive. One day it was, Shall I sell my hogs? What crop shall I put in the north 20? Another day, he asks, Shall I sell my standard tractor and buy a general purpose tractor? Am I feeding too much livestock? When questions like these are put to the student he immediately comes into actual contact with farm management.

A final point in method is having the student write out his recommendations as a permanent record. The committee can turn in at the close of the course a folder containing a permanent file of the recommendations of individual members and of the group as a whole, and the reaction of the operator to the recommendations. Then these reports can be used as a starting point for the work of the next class. You will be surprised, I think, how rapidly the problems on the same farm change. Each class that comes along will find new questions puzzling the operator. There are always decisions to be made. On one of our laboratory farms eleven committee reports have been filed, going back as far as 1931.

Unusual as it may seem, the farm operators, several of whom are now former class members, apparently welcome these committees. They seem to enjoy this opportunity to discuss their management problems. Moreover, in numerous instances they have adopted to their advantage some of the recommendations worked out by the students.

The exact procedure of this laboratory work is not important. What is important is bringing the student close to vital management decisions.

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REVIEWS

Dominion of Canada, Report of the Royal Grain Inquiry Commission, 1938, Ottawa, 1938. Pp. 264. \$1.00.

Readers of this JOURNAL will welcome this report for its survey, interpretations, and recommendations. It deals authoritatively with various aspects of Canadian wheat marketing, and it concludes with proposals for future marketing policy which the Dominion government is following closely. But the report has an even larger significance. The "Turgeon Commission" presents an excellent example of intelligent and effective procedure for resolving complex and controversial issues involving business, economics, and politics. Resort to similar procedures in the United States, under well-drafted permanent legislation, might easily constitute a significant improvement in our politico-economic machinery.

The appointment of such a competent fact-finding commission was suggested by James R. Murray, Chief Commissioner of the Canadian Wheat Board after its reconstitution following the Liberal landslide of October 1935, when on April 30, 1936 he concluded his defense of the "new" board before a special committee of the Dominion House of Commons. This committee recommended such action in its report of June 11; the House itself, and a sub-committee of the Privy Council, shortly endorsed it; and the formal appointment was made on June 27, 1936, under standing legislation.

This new Royal Grain Inquiry Commission was instructed broadly "to enquire into and to report upon the subject of the production, buying, selling, holding, storing, transporting and exporting of Canadian Grains and Grain Products, and other questions incident to such matters"; more particularly to cover five topics of specified scope; and finally to indicate "The measures which should be taken to retain and to extend the marketing throughout the world of Canadian Wheat and other grains and their products." This task was intrusted to a single commissioner—Justice W. F. A. Turgeon of the highest court of Saskatchewan, who had served in a similar capacity on earlier occasions and commanded general confidence.

Justice Turgeon had the aid of able counsel (J. L. Ralston, Montreal), and of the chief of the agricultural branch of the Dominion Bureau of Statistics (T. W. Grindley) as secretary of the

Commission. Beginning December 1, 1936, "sittings" were held in seven cities of Canada, in Chicago, and in seven leading grain-market centers of western Europe. All whose interests were affected by the inquiry were allowed to have their own counsel present. In 122 days, 260 witnesses were heard. In addition to the oral testimony, 715 exhibits were filed. Opportunity was taken to assemble and study practically all the material relevant to the topics considered, including much that had to be dug out for the purpose in hand. After nearly two years, during which the "sole commissioner" was engaged in a similar capacity upon an inquiry into the Canadian textile industry, the report was submitted on May 4, 1938.

The first two chapters constitute brief historical surveys of wheat growing in western Canada and the place of its agriculture in the Canadian economy. The next five deal with various aspects of marketing. Chapter III gives a broad comparison of the various forms of wheat marketing with which Canada has had experience—including open competition, the pools, and various types of governmental interposition; and Chapter V treats of farmers' demands for a change in the period 1920-23. At greater length Chapter IV deals with futures trading, Chapter VI with the pools, and Chapter VII with price-stabilization measures. These three important chapters—of which the last two include reliable material of much interest outside of Canada—contain well-judged statements of facts and reasoning, straightforward and judicious answers to outstanding questions, and criticisms put in language at once plain and tactful.

The conclusion of Chapter IV, like that of earlier commissions in 1923-24 and 1931, is broadly favorable to futures trading.

"... the result of this inquiry into speculation and hedging is to show by reasonable inference: (1) that speculators' costs are paid by themselves, while hedgers' costs are charged against the grain; (2) that in the aggregate the speculators are losers and therefore make a money contribution to the market where the only other operators are the hedgers; (3) that whatever benefit the market receives through speculators' losses is passed on to the producers and consumers mainly as a result of the competition among themselves of the hedgers as traders."

In Chapter VI it is shown that the Pool used the Winnipeg market in limited degree for hedging and at times for purchases which the Commission rightly labeled speculative. The Commission's broad

conclusion is that "the wheat pooling system was beneficial in several respects," but that several serious mistakes of policy, statement, and practice were made that should be avoided in future. The conclusion as to stabilization operations is that this "was an exceptional incident in the Canadian grain trade resulting from the misfortunes of the Pools and the unprecedented world-wide depression. It is to be hoped that similar conditions will not occur again. If they do it may be better to meet them by some other form of intervention."

Certain specific instructions are dealt with in Chapter VIII and in two appendices. In Chapter IX the causes of the decrease in Canadian exports are analyzed. The notable shrinkage in international trade in wheat and flour is first set forth by groups of importing countries, and later by groups of exporting countries. A summary of the rise and persistence of protective measures in importing countries, particularly in the last decade, leads to the sobering conclusion that

"unfortunately for Canada, the most restrictive of these emergency measures seem to become integrated into the economic policies of the countries. Since their end product is an increased domestic price, any advantage that might spring from increased demand with lower external wheat prices is precluded. So the 'law' of supply and demand as well as the principles governing international trade are offended."

The relevant policies of competing exporting countries are then summarized. The conclusion emerges that the great shrinkage of wheat imports by continental European countries, under the influence of their nationalistic policies, was the outstanding cause of the decrease in Canadian exports. This conclusion is broadly correct if one recognizes, as the Commission next does, that another important factor was the bad run of seasons that kept Canadian wheat yields below 12 bushels per acre in 1933-35 and below 10 bushels in 1936 and 1937.

Inquiring further, the Commission found that Canada herself had made other contributions to the narrowing of the export market for Canadian wheat. Canadian tariff policy had some influence in this direction, chiefly through playing a part in the adoption of restrictive measures overseas; and the Commission agreed with a leading witness (Murray) that even small additional outlets through mutual tariff concessions are worth striving for. Cited as another contributing factor were announcements at

international wheat pool conferences in St. Paul and Kansas City in 1926 and 1927, which appeared to indicate a policy "tending towards an international selling monopoly and high prices." In the same category the Commission reckoned, perhaps without due emphasis, "the incidents attending our 1929-30 crop year . . . , including the unfortunate pronouncements which accompanied the withholding of our wheat supplies," and "the effect of our stabilization measures, particularly in 1934-35." Satisfaction is expressed that the unfavorable effect of these last two incidents has "been removed by the policy . . . which resulted in the liquidation of our accumulated surplus."

Chapter X considers various minor possibilities toward solving Canada's wheat problem. Some conclusions are reached. "Durum wheat acreage cannot be relied upon to absorb any decrease in bread wheat acreage." "The future of oats as a western crop is . . . closely related to the future of the live stock industry." Malting barley is a more promising alternative: barley does best in the "park lands" where wheat is lower in protein content, and more attention should be given to the production of malting barley in these areas. Summaries of researches into industrial uses of wheat afforded no ground for hope of appreciable diversion of wheat to such outlets as starch and gasoline substitutes.

Before appraising the outlook or recommending policy measures, the Commission expressed the conclusion (p. 139) that

" . . . Canada is, and . . . must remain, a large-scale exporting country, and that wheat is one of our main export commodities . . .

"In the course of time our producers may find it to their advantage to devote their activities, in a larger degree than at present, to some other form of agricultural production. But our present problem is to find markets for the whole of the wheat surplus we are producing and are likely to continue to produce for a long period of years."

Early in the discussion of the prospects for international trade in wheat, in Chapter XI, divergent views of leading witnesses are summarized. With Canadian wheat—like Argentine but unlike American—mainly dependent on exports, it is concluded:

"If ever again circumstances should induce the Government of Canada to intervene in wheat marketing by paying the producer a price in excess of world prices, no attempt should be made to enforce that excessive price overseas, that is, to pass the burden of our relief to the producer on to the overseas buyer. He will not accept the burden. And in the long run all attempts to pass it on, by withholding supplies or otherwise, will prove

detrimental to the producers themselves, because it will again indispose buyers towards Canadian wheat."

The increased concentration of ownership in the British milling industry and the "rationalization scheme" in effect since 1929 are noted; but the Commission obtained in London unanimous and authoritative denials that British millers buy wheat in combination or in concert, and convincing evidence that these millers (with the exception of the English Cooperative Wholesale Society and its Scottish counterpart, which have Canadian purchasing offices) buy Canadian wheat through merchants. The Commission was impressed by testimony of British millers that they "desire above all an absolutely free market in all respects"; that all the larger millers regard a hedging market as essential and value the Winnipeg market highly; and that Canadian wheat must be "fairly" priced if it is to keep its due place in the millers' grist. Representatives of the English wholesale cooperative were less insistent on the importance of maintaining the Winnipeg market, but saw difficulties in the way of having any Canadian wheat board, even with consumer representation, sell the whole Canadian crop.

Evidence from the British grain trade strongly reinforced the views of British millers, and led the Commission to the additional conclusions that Canadian wheat should be sold in Great Britain through the ordinary channels of trade, rather than through Canadian agents abroad (as was the Pool policy for some years prior to 1930) or through merchants restricted to handling Canadian wheat.

The conclusions as to future marketing policy are set forth in Chapter XII. Significantly stressed is the principle that maintenance of the goodwill of overseas customers is fundamental:

"... nothing is more important at present than the adoption by this country of a selling policy which will dispel ill-will abroad and give the highest possible measure of satisfaction to our customers in their day to day dealings with us. We must meet competition fairly, but competently, and the lessons of the past . . . show that satisfaction to customers and abstention from actions which breed suspicion and alarm are important elements of successful marketing, because they help to maintain and to extend markets. At the same time the individual producer must feel that markets are not being maintained and extended at too great a sacrifice to his personal interests as reflected in the prices he receives. He must be satisfied that the service he is getting assures him the highest return reasonably obtainable for his product."

Under normal conditions—"open markets in the United King-

dom, a fair relationship between world supply and import demand, and no danger clouds on the immediate horizon"—it is adjudged that the government should remain out of the grain market, and particularly avoid creating a government marketing monopoly; and that the marketing policy should include the following elements:

(1) Continuation of the futures market at Winnipeg: "the futures trading system, despite its imperfections, is the one best qualified to look after the interests of our producers, at home and abroad"; "the closing of the Winnipeg exchange . . . would have a depressing effect upon our marketing . . ."

(2) Encouragement of marketing cooperatives similar to the Australian pools—"organized on a flexible, voluntary basis, not necessarily of great size, selling in line with market conditions, and operating overseas 'with the trade and not against it,' making use of the futures market to fix an attractive price and to accommodate buyers but not for speculative buying. (Based on inadequate evidence on the Australian pools, this passage and its implications are properly open to criticism.)

Three supplementary suggestions are offered:

(1) The Board of Grain Commissioners should be given the responsibility of supervising futures trading on the Winnipeg Grain Exchange, with authority to secure full information, to make orders and regulations superior to the rules of the exchange, to investigate particular situations, to apply general powers of remedy, and to decide what general facts should be published.

(2) Canada should have a representative in London, in touch with Canadian agencies in Great Britain but attached and reporting to the Board of Grain Commissioners, who should investigate complaints arising out of grain shipments and supply information on conditions for marketing Canadian grain in Europe.

(3) The work latterly undertaken by the Canadian Wheat Board, to promote the use of Canadian grain products abroad and to publish information on conditions affecting such marketing, should be continued with changes dictated by experience—by another agency if and when this board should be dissolved.

Finally, recognizing that the return of "normal conditions" "is not immediately in sight," and "that conditions may develop which will require a measure of assistance in the marketing of the coming crop," the Commission suggests that the existing Wheat

Board "be maintained to meet any situation which may arise." Recent Canadian actions, it may be added, are in keeping with the analyses and recommendations of the Turgeon Commission. In general, its report furnished sound guidance for statesmanlike decisions.

JOSEPH S. DAVIS

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Farm Economics—Management and Distribution (revised), by Frank App and Allen G. Waller. Philadelphia: J. B. Lippincott Company. 1938. Pp. 700. \$3.00.

This book was written, it is evident, both from its introduction and from its content for the general reader whether a farmer, a prospective farmer, or a person interested in farm and agricultural affairs. It was written for persons of intelligence, to be sure, but not for persons either of specialized interests or specialized attainments.

Its 700 pages deal with and cover to a considerable extent the field of agricultural production, farm management, agricultural geography of the United States, rural credit, agricultural prices and marketing. There is a special chapter by G. Harold Powell on the Principles of Cooperation in Agriculture.

The book discusses a wide range of economic matters affecting agriculture in a way that should prove valuable to the group of readers for which the book is obviously intended. It is, however, as much a descriptive technical agricultural and geographic treatise as it is an economic treatise.

Its pages are full of comment and observations by the authors on problems in various phases of the broad field of agricultural economics, comments to which, with exceptions, agricultural economists are not likely to take issue. It is replete with tables, charts, maps and short appendix which should prove of value and interest to the reader. The larger part of both the illustrative material and the appendix has been gleaned from the various publications of the United States Department of Agriculture.

The Farm Management specialist who gives consideration to the economic foundations of farm management will be disappointed that the authors fail to set forth either the principles of production economics, or the principles of marginal analysis on which the

substitution method of farm reorganization rests. The treatment of farm accounts and cost accounts as a basis of enterprise selection seems to the writer unsatisfactory for the same reason.

Another weakness seems, to the writer, implicit in the authors' treatment of Farm Management. As an example, while differences in the circumstances and aptitude of farmers is brought to the reader's attention, too great emphasis is placed on the fact that larger farms, and farms with more productive livestock, on the average have higher incomes. It by no means follows that all farms, even those of small size businesses or less productive livestock should try to increase these factors, nor should the average figures imply the existence of a general principle of farm organization.

These difficulties would be reduced by a vigorous application of certain fundamentals of economic theory of an elementary character. Only by including such fundamentals can a treatise, in the writer's opinion, be most useful both to the advanced student and to practical farmers.

Despite the statement of the preceding paragraph, the writer is of the opinion that App and Waller's book can be made useful in the teaching of an introductory course in general agricultural economics in college and high school, if properly supplemented from the standpoint of economic theory by a competent teacher and by other books. As a convenient reference book it could well be made available to every undergraduate student in Agricultural Economics.

I. G. DAVIS

Connecticut State College

Consumption in Our Society, by Elizabeth Ellis Hoyt. New York: McGraw-Hill Book Company. 1938. Pp. vii, 420. \$3.00.

The first part of this book is given over to a consideration of the problem of consumption and choice. Economics viewed in terms of "the use of goods by ultimate consumers," consumption, has according to the author, only recently come into its own as an analytical approach to economic problems. There was little of value contributed to the subject from the time of Adam Smith down to the present generation of economists (p. 1). "Choice," Dr. Hoyt declares to be the key to consumption economics (p. 10). And man's basic interests, his "sensory," "social," "intellectual," "technological," "aesthetic" and "emphathetic" interests, are the deter-

minants of choice. Civilizations vary, however, in their emphases upon these interests and may be accordingly categorized typologically. Modern western civilization is "technological." The fundamental guiding principle is the law of "least effort" though admittedly there are "hangovers" which exert an influence upon the functioning of the law.

The second section of the book (Chapters VI to XIX) deals with consumption and the exchange system. The discussion is centered on consumer "sovereignty" in relation to competition, machines, advertising, consumers' protection, standardization, monopolies, tariffs, cooperation, business cycles, distribution of incomes, taxation and governmental services. In this discussion, which is, in the reviewer's opinion, the most significant part of the book Dr. Hoyt is presenting classical economics from the point of view of the home economist. The third section (Chapters XX to XXVII) treats of the measurement of consumption. Here a differentiation is made between the scale of wants (standard of living) and the scale of goods consumed (plane of living). In the final chapters the subject dealt with is the maximizing of satisfactions. The argument here reverts to the Austrian hedonic analysis of life, with particular emphasis upon a psychology typical of Simon N. Patten. "The great aim and end of the study of consumption is the problem of maximizing satisfactions" (p. 343).

However much one may disagree with parts of this work, it represents a distinct advance over most of the existing texts in the field. It is the opinion of the reviewer, however, that the treatment of the much discussed problem of cultural types is not especially pertinent to this particular work. While he would not deny the usefulness of a typological analysis insofar as standards of living are concerned he finds the classification of cultures according to the Spencerian scheme found in Chapter III or the simple categories in Chapter II unsatisfactory and little suited to the subject in hand.

Section III on the measurement of consumption is next in importance to the section on consumers' sovereignty. The reviewer concurs with Dr. Hoyt in her skepticism of previous efforts to evolve "laws" but believes she attributes the difficulty to an erroneous cause—faulty statistics (p. 27). Moreover, he finds her falling into similar error when, on the basis of limited studies, she seeks to set forth general conclusions concerning consumption tendencies.

The book contains much interesting illustrative material. Conditions in the Russian Soviet are frequently cited at length, the (perhaps dubious) implication being that in them may be found important data for the economist interested in consumption. In the main the opinions expressed by Dr. Hoyt are the result of her own acute observations. Of timely interest is her courageous exposure of the influence of our Agricultural Administration in lowering the American standard of living. Certainly she does not find its end results to have been an "assisted laissez faire."

CARLE C. ZIMMERMAN

Harvard University

Price Effects of Canadian Wheat Marketing, by Holbrook Working. Wheat Studies, Food Research Institute, Stanford University, California, Vol. XIV, No. 2, October 1937. Pp. 37-68. \$1.00.

The effectiveness of the market "in absorbing, without undue price depression, the burden of hedging that arises in connection with the farmers' marketing" of wheat is the problem under investigation in this study (p. 37). This question is factually investigated because of the existence of a "unique" body of statistics that are available in the compiled record of country deliveries of wheat.

The conditions of this problem are: first, that the major part of the wheat must be exported; second, that marketing takes place at a time when world supplies are at their maximum; and third, that ultimate market absorption (milling) of Canadian wheat tends to be technically fixed by the absorption of wheats other than Canadian. It is because of these unusual conditions that unexpected weaknesses in marketing efficiency should be clearly revealed. During the period reviewed, the first few years after the war, conditions approximated those of the open market, while in more recent years "the most powerful cooperative wheat marketing organization in history was trying out, under favorable circumstances, its ideas for improving the functioning of the price system." The conclusion is reached that "the statistical evidence for the eleven years from 1922 to 1932 inclusive gives no indication that day-to-day fluctuations in country deliveries had any influence on the price spread between Winnipeg and Liverpool," while from 1933 to 1936 "daily variations in country deliveries seem to have affected the Winnipeg price in about the degree represented by a

price decline of .3 to .6 of a cent for an increase of one million bushels in daily deliveries" (p. 59).

The method employed is to relate country deliveries (the unique data) to "price *relations* between Canadian and other wheats" (p. 47, author's italics). The reason for the comparison of these two series is that price relationships are little affected by the major influences on general price levels because these similarly affect all prices. The price in the market for the wheat delivered is not related to deliveries because the price effects of variations in the rate of delivery "are small in comparison with the effects of other price influences" (p. 47). The graphic presentation of the data Working points out to be inconclusive, so resort is taken to four different methods of summarizing the data. These are: first, in terms of seasonal averages; second, in terms of marketing periods; third, in terms of averages over five-day intervals; and fourth, in terms of daily averages. The first three methods consider "sustained" changes in the rate of delivery; the last provides an answer to the important question of "the ability of the Winnipeg market to absorb unexpected variations in the volume of hedging" (p. 58). The raw results of the last method may be cited for the interest they hold: "accompanying a 'normal' departure of deliveries of, say, .35 million bushels from the five-day average there tended to be a departure of price of only about .21 of a cent" (p. 59). With respect to the magnitude of fluctuation in daily deliveries Working observes that "changes as great as one million bushels in the average rate of delivery rarely occur between successive five-day periods" (p. 56), and that there is a usual delivery of two or three million bushels daily.

The greater sensitivity of the Winnipeg market in more recent years is related to "the outright interference with the operation of the futures market" (p. 62) and not to the reduction by about one-half in the amount of wheat deliveries to be hedged (the result of cooperative pooling) nor with price stabilization operations because of cooperative pooling. Working finally concludes that the effect of substantial day-to-day variations in deliveries are "always very small and commonly imperceptible" and that "the absence of measurable price effects . . . reflects an extraordinary degree of perfection in the operation of the futures market under normal conditions" (p. 65).

The study serves to confirm *a priori* expectations. It should aid

in correcting popular fallacies and in keeping emphasis on the importance of demand and supply forces as opposed to market phenomena. The reviewer concludes that general price effects must be adduced from causes operating on demand and supply rather than from forces that may temporarily affect the position of available supplies.

ARTHUR R. UPGREN

University of Minnesota

Monetary Influences on Postwar Wheat Prices, by V. P. Timoshenko, Wheat Studies, Food Research Institute, Stanford University, California, Vol. XIV, No. 7, 1938. Pp. 263-318. \$1.00.

This study is oriented upon the claim that there is "an important advantage" in the study of the price behavior of a commodity "whose prices have been adequately studied and interpreted in terms of specific supply-demand relationships." The advantage is said to exist in comparison with the results of studies that employ general or group index numbers. According to the author the use of index numbers in price studies involves the assumptions (1) that averages composed of divergently moving prices compensate for factors "varying from one commodity to another" and (2) that "those factors which affect in the same direction all commodities included in a group will find expression in the movement of group index numbers." The advantage in the study of prices of specific commodities is that "part of the price movements which represent reactions to factors relating to particular commodities is likely to be better isolated and better understood than under the index-number method." (p. 264).

Serious doubt is raised as to whether this advantage might not develop into a disadvantage for commodities whose prices have not been "adequately" studied in terms of supply-demand relationships. It is monetary influences (i.e., not exchange rate policy as a monetary influence) that are being studied. There can no more be price movements in a general index that are due solely to "supply-demand relationships" than there can be a general rise in values. For something less than a general index, i.e., a group index number, the desirable analysis is of differential price changes. The distinction between the analysis for such grouped commodities and the analysis for specific commodities is not sharp.

As has been said price movements in a general average cannot

be explained without a consideration of monetary influences. But monetary influences as an explanation of price must express themselves in the terms of demand and supply. It is for this reason that the segregation of monetary influences and the force of a changed supply-demand relationship seems not to be desirable. It is true of course that for almost transient purposes of analysis supply and demand may be held as unaffected by monetary action.

Timoshenko's method stated most briefly is to find the extent of price change that is explainable by the demand and supply relationship which in his study is measured in carryover. This leaves a residuum of price change that is generally attributed to monetary influences not considered to be embraced within the supply-demand relationship. The method, of course, could be reversed by measuring the price change that results from the operation of monetary forces and by regarding the residuum of price change as attributable to supply and demand changes.

An illustration may be given (from the study) of the analysis of exchange rate alteration as one of the monetary influences. In Australia after the harvest of 1930 (December) the exchange rate on London rose from about 105 to 130 (pounds Australian for pounds sterling). Of this depreciation in January and February, 1931, Timoshenko says, "so precipitous a depreciation of Australian currency in the beginning of the heavy marketing season for the 1930-31 wheat crop *necessarily* affected the course of wheat prices not only in Australia but also on the world market" (p. 305, reviewer's italics) But the failure to analyze the effects of monetary changes in terms of their effects upon supply and demand, to this reviewer at least, results more frequently in categorical statements such as the above than in an explanation of just how the prices were affected.¹

The study supplies an excellent chronological story of the price of wheat throughout the entire postwar period. It gives the broad outlines of the story that explains the present position of wheat as well as some of the details of government intervention. It does not, however, clarify the causal effects of monetary influences on wheat prices except in terms of "decline in deposits," "monetary tension,"

¹ MacLaurin in commenting upon this development in Australia points out that "Australian exchange depreciation probably served to precipitate a drop in the gold and sterling price of wheat which was inevitable, rather than to cause a decline which would not otherwise have occurred." (*Economic Planning in Australia*, p. 156.)

etc. (p. 304) and it is probably the too-frequent use of these terms to explain the general price development that induces criticism of analysis that employs general index numbers. But the study contains the very substantial merit of unfolding most clearly a record, of a period embracing a whole host of disturbing changes, monetary and otherwise, the very duration of which precluded full analytical treatment.

ARTHUR R. UPGREN

University of Minnesota

Citrus Enterprise—Efficiency Studies in Southern California, by Arthur Shultis. University of California Agricultural Experiment Station Bulletin 620. 1938. 65 pp.

This bulletin is an attempt to bring together and analyze the citrus enterprise-efficiency studies that have been conducted in one or more of seven southern California citrus counties since 1926. The studies were conducted cooperatively by the Agricultural Extension Service and citrus growers, and the County Farm Advisers have issued mimeographed summaries of the work in their respective counties from time to time. The bulletin is based upon data for Navel and Valencia oranges and for lemons obtained in the eight year period 1928 to 1935, inclusive. A summary of the results obtained in 1936 also is included in the six valuable basic tables in the appendix.

The author states that "The factors influencing net income are yield per acre, price of fruit per box, and costs per acre," and that the most favorable combination of these three factors results in a relatively high net income. He then proceeds to make his analysis of the effects of these three factors upon net income. Unfortunately, very little use is made of the available data in the analysis work. Individual orchards rather than groups of orchards are used as illustrations. If all available orchard records had been used in making sorts and sub-sorts of the data on the basis of the causal factors, the effects of these factors on net income perhaps would have been more outstanding, since individual variations would tend toward equalization in the group averages.

Prominence is given to the setting up of standards of inputs and costs to be used as guides for present and prospective citrus producers in the southern California area. Although these standards in most instances use the actual data as their foundation, in other

instances they appear quite arbitrary. For example, in the cultural costs standard for lemons in table 7, the bulky organic fertilizer recommendation is nearly 50 per cent below the actual cost per acre in all orchards where reported. On the other hand, the cost of labor and fuel for frost protection in the standard has been increased more than 50 per cent over the actual costs for this service in reporting orchards. The reasons for these drastic differences are not clear. It is the opinion of the reviewer that an average of the factual data from a group of the most profitable orchards in the study would serve much better as a standard of efficiency than any arbitrary measuring stick that could be devised.

This bulletin should be of real aid to all persons interested in the citrus industry. The basic tables in the appendix are of particular value.

C. V. NOBLE

University of Florida

Research in Agricultural Index Numbers—Scope and Method, by John D. Black and Bruce D. Mudgett. New York: Social Science Research Council Bulletin No. 10, March 1938. Pp. viii, 152. \$.75.

This bulletin completes the valuable scope and method series of reports on research in various fields of agricultural economics and rural sociology that have been published at irregular intervals since 1930. Numbered 10 in a series of twenty-one reports, its belated appearance is indicative of the complete lack of agreement among index experts as to the proper procedure in good index number construction. The authors have conscientiously chronicled the dissenting views of all members of the special advisory committee for this report, as well as a faithful summary of all conflicting views in the previous literature on the subject. This leads to what might seem a somewhat disproportionate assignment of space to relevant index number theory in comparison with that given over to a discussion of specific projects. In some respects, much of the discussion resembles a summary of the proceedings of a preliminary conference on the problem.

A close appraisal of this publication will reveal rather general adherence by the authors to the principles of the "ideal" formula developed by Fisher. Many arguments are advanced to justify the supremacy implied in the naming of this formula, and con-

siderable reliance appears to be put in the tests set up by Fisher for the appraisal of good index number series.

The greater part of the bulletin is concerned with time comparisons, agricultural index numbers being used primarily in the summarization of price changes over time. Part One is devoted to a discussion of the development of local market price index numbers. Part Two details the many points at issue in the theory of index number construction. These conflicting opinions cover even the definition of the term "index number" from which the junior author emerges with the definition of indexes as "a measure of average change of a given phenomenon in time and space."

The authors state that the heart of the index number problem is the determination of this average change. Component series to be summarized seldom, if ever, are of equal importance. This makes "the nature of weighting required to produce the summary figure" the main problem to be solved in index number construction. One of the principal points of distinction as between types of index number construction is in regard to weights. The chief point of dissension among index experts, as summarized in this bulletin, is in regard to the use of fixed vs. changing weights.

The authors select Fisher's "ideal" formula as perhaps the closest approximation to a real solution of the weighting problem. This formula is a combination of two other formulae, one using the quantities of the base year as weights and the other using the quantities of the given year. The arguments against the changes in weights here involved are outlined, but Black and Mudgett attempt to justify the use of the "ideal" formula despite its failure to fit weights to component series exactly in accord with the conditions of reality existing in any specific period. Quotations from Stine's statements sum up the arguments in defense of the system of fixed weights now used by the Bureau of Agricultural Economics. No mention was made, however, of the incongruity of the changing weight systems of index construction which sometimes permit actual increases in agricultural price indexes when a majority or even all of the component series decline. The authors rather neatly side-step reference to this condition in some existing monthly State indexes by confining their theoretical discussion primarily to annual indexes of price changes.

Many readers of this bulletin may come to the ultimate conclusion that for annual indexes various formula produce few significant

differences in actual practice, when errors in available price series and weighting factors are considered. It is doubtful if Fisher's "ideal" formula is significantly more accurate than other formulae of a much more simple type when the probable error of the basic data is considered. Only about 10 per cent of the State price samples collected by the Bureau of Agricultural Economics reach its goal of accuracy of one-half of one per cent. In many cases the error in the data available for weights may be as much as 5 or 10 per cent. It is seldom that annual index number series based on Fisher's ideal formula differ from a series of fixed-weight indexes by even 1 or 2 per cent. In view of this situation, the time consumed by using the "ideal" formula is excessive. Furthermore, absence of current weights would entail the use of normal quantities in computing preliminary indexes of the Fisher type for prices received by farmers, and these would have to be recomputed at great labor and expense when final weight data were available. In practice, the users of price indexes would object strenuously to such frequent revision even though a slight gain in accuracy was involved. In the absence of any current reporting service for quantities of articles purchased it would be next to impossible to construct the "ideal" index for prices paid by farmers.

The authors include in this bulletin a quite valuable summary of some very useful principles regarding the choice of a base period, the choice of years for the determination of commodity weights and other vital considerations. Prospective index builders are well warned against the use of the normal concept in their search for a base, the stability of price relationships being pointed out as a factor of prime importance.

Part Three of this bulletin presents a fairly complete inventory of existing series of agricultural indexes. It is significant to note that a majority of the price indexes now computed are of the fixed-weight type using Laspeyre's formula or minor variations therefrom. The senior author concludes on page 80 that for price indexes, this formula serves "as a practical approximation to the answer to the general question, How have prices changed?"

An evaluation of existing series also is included in this section from two standpoints: (1) value of series now constructed as indicators of change; and (2) the present coverage of the field needing index numbers. Research workers will be particularly interested in Professor Black's discussion of coverage. With his characteristic

vision, he has pointed out numerous specific instances of the tremendous possibilities for the use of indexes in summarizing changes in statistical phenomena in all agricultural economic fields of investigation, which with the exception of prices received by farmers have been largely undeveloped to date.

Part Four of this bulletin is devoted to specific research projects relating to index numbers. Suggestions for special projects concerned with methodology are listed very briefly, experimental results dealing with the effects of using various special formula being available already in books published by Fisher and others. In regard to the development of specific index numbers, an excellent sample project by Dr. A. G. Peterson, describing procedure for the construction of an export and import volume index, is included. A companion project for a State price index series by Dorothea Kittredge proceeds with the naive assumption that 12 separate sets of "ideal" indexes, employing weights in accord with seasonal variation in marketings, are required to make a monthly price index series. Unfortunately, Mrs. Kittredge failed to mention that such a procedure is of little value in explaining price changes to those of the general public currently interested in short-time summary comparisons, at those not infrequent intervals when a shift in weights as between successive months forces the summary index figure in a direction opposite to that reported for prices of most commodities.

This is the one very real criticism of the bulletin as a whole. In its effort to fit pure theory to the realities of life, and the resultant confusion of changes in the volume of sales with changes in prices, it has failed to point out that the so-called "ideal" index lacks the requirements necessary to measure the month-to-month price changes that are of such general current interest to agricultural workers.

R. F. HALE

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Financial Study of the Joint Stock Land Banks. A Chapter in Farm Mortgage Banking, by Carl H. Schwartz, Jr., Washington College Press, Takoma Park, Maryland. 1938. Pp. 210.

Here is an excellent book. Among the characteristics which distinguish this book two are outstanding. In the first place, it brings

to light an extensive array of new data on the joint stock land banks, including basic material made available to the author by the Farm Credit Administration. The author was especially well fitted to interpret these data because of his position with the Farm Credit Administration. His work included analysis of just such material as appears in this volume. In the second place, this book is well organized and well written. It is a thorough, scholarly and accurate treatment of the joint stock land bank experiment. In addition to the text, students in the field will welcome the comprehensive bibliography of Congressional references appearing in the Appendix.

This study, which represents a doctoral thesis submitted by the author to Columbia University, is a splendid example of a desirable type of thesis. The author is to be commended because he chose a field in which he was particularly well qualified to make a contribution. And the Farm Credit Administration is to be commended for its willingness to provide the data. It is to be hoped that this volume may encourage others to follow this general plan.

Although agreeing with the author in the main, the reviewer is inclined to disagree with the author on several points. These are points, however, on which a difference of opinion might well be expected. The author, for example, goes to some length in the chapter on Foreclosures and Real Estate to reconcile foreclosures with the drop in land values. Since joint stock land banks loaned on the average about 40 per cent of appraised value and since land values in the United States between 1925 and 1932 only dropped from an index of 127 to 73, the question is why were there so many foreclosures. The author points out that values declined more in some areas than in others. But he fails, in the reviewer's opinion, to emphasize sufficiently the fact that many of the appraisals were out of line, particularly on certain types of relatively poor security. This situation plus depreciation in buildings and in land through erosion wiped out the equity of the owner and left the joint stock land bank with a farm whose value was much less than would be expected by comparing the original appraisal and the drop in the land value index.

One of the main contentions of the author is that the joint stock land banks with a 15 to 1 bond-stock ratio were allowed a higher proportion of bonds to capital stock than was safe or desirable. He points out that this narrow margin of equity was not adequate

during the depression years. However, a larger equity might not have kept the banks out of difficulty because, as the author indicates, during the depression the banks were able to make large profits from buying their bonds at a substantial discount, a discount which might have been much less if a lower ratio of bonds to stock had existed. In view of the fine record made by the joint stock land banks in their liquidation, it is possible that government loans to the banks would have enabled them to come through the depression in good shape. It is enlightening to note on page 172 that in liquidation of their assets, three of the banks have distributed dividends to stockholders of 200 per cent or more.

The reader will find this volume not only is a handy reference for statistics and analysis of joint stock land bank operations, but also contains a comprehensive treatment of farm mortgage policy with which every student of farm finance should be familiar.

WILLIAM G. MURRAY

Iowa State College

Economic Studies of Poultry Farming in New York—I. Commercial Poultry Farms, by E. S. Misner and A. T. M. Lee, Cornell Agricultural Experiment Station Bulletin No. 684, 1937. 118 pp.

Doctors E. G. Misner and A. T. M. Lee are the authors of Experiment Station Bulletin No. 684, published by Cornell University, entitled "Economic Studies of Poultry Farming in New York." The publication gives a business analysis of the poultry enterprise on New York commercial poultry farms for six years. The information was obtained by means of the survey with the use of farm record blanks.

The bulletin contains much factual material. For practical purposes, however, the statistical material is out-of-date, 1933 being the last year for which data are given. Data for more recent years have been published in mimeographed form. The variety and amount of information published indicates that the enumerators must have done a thorough job of obtaining records. The bulletin, however, is too statistical and detailed for the average farmer to read. From the poultryman's standpoint, the bulletin would have been more usable if the long detailed tables had been omitted from the text. For the benefit of technical workers, this material could have been included in the appendix.

Some reference is made to statistics from other sources that have

little bearing on the study in New York. The comparison of price trends in New York and South Africa (page 6) would lead the reader to believe that the authors had to go a long way to get a comparison to prove their contention. At least, if New York egg prices are compared with those of South Africa, some other countries might have been included.

In figuring the cost of raising pullets, the authors assumed that the selling price of the cockerels was equal to the cost of production and any difference between the cost and selling price was credited or debited to the pullets. This procedure is questionable. On page 16, figure 1 shows that during four of the five years the cost of producing eggs was higher than the selling price. However, as shown in figure 1, there was a plus labor income for each of the years. One would assume from this that labor income may not be influenced so much by changes in cost of production and that income from other sources on the farm is a more important factor influencing labor income.

Some of the definitions of terms are not clear. For example, the authors say "percentage mortality of the layers is the percentage of the layers on hand at the beginning of the year or of the average number which died during the year." Also, some of the statistical calculations seem to be inaccurate. For example, in table 26, the price of hatching eggs for May, 1929 is given as \$5.88 per dozen. It does not seem reasonable that hatching eggs would cost 49 cents apiece.

There seems to be much repetition of data. Detailed tables are shown for the six years and the same figures are presented in the text, sometimes accompanied with a chart showing the same general information. Rather than repeat in the text the figures that appear in the tables for each of the six years, ranges or trends could have been given with more analytical treatment of the economic significance of the data.

The formulas for computing the cost of producing eggs and the production necessary to pay the feed bill, granting that the assumptions are correct, should be a contribution to poultry research workers.

Although there is some repetition of data under the heading, "Factors Affecting Labor Income and the Cost of Producing Eggs," this section of the bulletin is well arranged and is written in a clear, comprehensive style. The authors end the bulletin with a few very

good conclusive paragraphs under the headings, "Effect of Combination of Factors on Labor Income" and "Farm-Management-Efficiency Program for New York Poultry Farms."

S. H. DE VAULT

University of Maryland

Changes in Technology and Labor Requirements in Crop Production: Corn, by Loring K. Macy, Lloyd E. Arnold, and Eugene G. McKibben. Philadelphia, Works Progress Administration, National Research Project, Report No. A-5, 1938, xviii, 181 pages.

This publication deals with the results of a study made to measure the effects of recent changes in farming methods and practices on the amount of human labor used in producing the corn crop. The two important influences are the adoption of improved or large mechanical equipment, and agronomic discoveries that influence the amount of direct labor required as well as the amount of corn produced per unit of labor.

The authors stress the place of breeding and improvement of corn among the changes in technology and labor requirements, and, to give the reader a clearer picture of how corn breeding and improvement is carried on, a description of mass selection and corn breeding is given. Some brief attention is given the probable labor costs in combating the diseases and pests of corn. Major changes in cropping systems and the use of green manure crops are touched upon before the authors get to the discussion of changes that have taken place in the type of equipment and in the amount of power used in corn production.

The body of the report includes a large amount of data measuring the changes that have occurred in cultural practices and in the hours of labor used in corn production in four main areas of the country: the corn, small grain, dairy, and cotton areas. The data presented were drawn from a field survey and from data available at experiment stations and in the United States Department of Agriculture. The number of hours of man labor per acre of corn was estimated for each of the four areas for the years 1909, 1919, 1920 and 1936. The hours of man labor per acre of corn in the United States was found to have decreased from 28.7 in 1909-13 to 22.5 in 1932-36, a reduction of 22 per cent. Most of this reduction occurred in and west of the Corn Belt. In this western area,

of most rapid corn expansion, the low labor requirements about offset low yields, so that when the amount of labor used in growing corn in this newer corn area is expressed per 100 bushels the labor cost of corn in the area compares very favorably with that in the Corn Belt.

The authors come to the conclusion that the adoption of labor-saving machinery will continue in the principal corn producing areas of the United States and as a result "the prospect seems to be for further decline in employment offered by the production of corn."

R. H. WILCOX

University of Illinois

Farm Tenure in Iowa. I. "Tenancy Problems and Their Relation to Agricultural Conservation." Rainer Schickele and Charles A. Norman. January 1937. Bulletin 354. II. "Facts on the Farm Tenure Situation." Assembled by Rainer Schickele. November 1937 (Reprint). Bulletin 356. III. "The National Farm Institute Symposium on Land Tenure." April 1937. Bulletin 357. IV. "Farm Tenure Conditions in Palo Alto County." Prepared by Rainer Schickele. August 1937. Bulletin 364. V. "Some Legal Aspects of Landlord-Tenant Relationships." Marshall Harris, Albert H. Cotton, and Rainer Schickele. April 1938. Bulletin 371. Iowa Agricultural Experiment Station, Ames, Iowa.

This series of bulletins is noteworthy from at least two standpoints. Probably of greatest interest to agricultural economists is the recognition on the part of both the authors and the sponsors that research workers in agricultural economics have a definite responsibility to guide the selection of objectives for agricultural policy, and to aid in the process of determining ways and means to accomplish those objectives. In the preparation of these bulletins the authors have pushed back the frontiers of agricultural economic research. No longer can it be said that research in the field of farm tenancy has been confined to a mere description of the past and the present; in this series of bulletins, agricultural economists have taken upon themselves the burden of direct assistance in policy making. For this the authors of these bulletins are to be congratulated.

This series of bulletins is likewise noteworthy for the part it is

playing in the farm tenure reform movement in Iowa. The people of the State of Iowa have taken the lead in the discussion of State action to alleviate the problems of farm tenancy, and to improve the system of renting and in these public discussions of tenure problems, the bulletins have played an important part. They served, for example, as a non-partisan source of factual information which was used by the Iowa Farm Tenancy Committee that sponsored discussion meetings in every county of the State. That the point of view of these bulletins and many of their specific proposals were adopted by the Committee for its report is a testimony to the worth and accomplishments of this series.

Numbers I and IV (Bulletins 354 and 364) of this series are praiseworthy examples of a new technique which combines research investigations with educational or extension activities. The first of the series is a summary of discussions with the County Agricultural Conservation Committees in 28 counties which were held by representatives of Iowa State College. Bulletin 364 is a summary of the findings of the Palo Alto County Agricultural Planning Committee which studied the farm tenure problems of the county in 1936. The work represented by this bulletin is an example of an effective approach by local farm leaders in seeking a solution to their own problems. As an illustration of democratic agricultural planning, these bulletins are striking.

Bulletin 356 (No. II of the series) is a collection of graphs, maps, and tables presenting facts on farm tenure in Iowa. A short statement pointing out significant suggested relationships accompanies each chart. While this bulletin contains very little analysis or interpretation of the data presented, it will be of considerable use to those who desire a concise picture of farm tenure in Iowa.

Bulletin 357 (No. III of the series) is a collection of the talks given by various agricultural leaders of the Nation at the first National Farm Institute which was held in Des Moines, Iowa, February 19 and 20, 1937.

The fifth of this series (Bulletin 371), to a greater extent than any of the other bulletins of the series, is a departure from the traditional form of tenure research. Definite suggestions concerning appropriate readjustments of the Iowa legal structure are made by two agricultural economists and a lawyer, working in cooperation. The statement of recommendations is based upon a thorough

examination of the social and economic problems arising from the everyday working of the Iowa Codes and common law rules which govern the relationships between landlords and tenants.

J. A. BAKER

*U. S. Department of Agriculture
Bureau of Agricultural Economics*

League of Nations, World Economic Survey, Seventh Year, 1937-38, New York: Columbia University Press, 1938, 244 pp., \$1.50 paper, \$2.00 cloth.

Readers who wish to keep abreast of economic developments in other countries as well as in the United States would do well to examine this report prepared by J. E. Meade, temporarily attached to the Economic Intelligence Service of the League of Nations.

Mr. Meade characterizes the sharp contraction of industrial production which began about the middle of 1937 as "the American depression," pointing out that it first appeared and has been most severe in this country. In other countries there have been divergent movements during 1937-38 but a general tendency to follow in the decline at a less violent rate. A question which reappears at several places through the report is whether this depression has run its course, or whether it is likely to develop into a long-lived and serious period of world economic stagnation like the slump following 1929.

The report describes in considerable detail principal economic events from the latter part of 1936 to early 1938. Changes in economic activity are described for the different countries, as well as those in employment and wages, prices, money and finance, international trade including the balance of payments and international exchange, and the shifts in economic policy of the principal governments.

Following the onset of the recession in the United States, the imports of this country fell sharply while exports rose; thereby carrying the depression to the countries with which we trade. The present period differs from that in 1929 in that many countries have hedged themselves about more completely with trade barriers. Nevertheless, they have not been able to escape altogether the effects of a collapse of purchasing power in the United States.

During the period of the study, developments were such as to be disadvantageous to countries which depend on the exportation

of raw materials and foodstuffs. Agricultural prices fell more than non-agricultural ones. Inventories of raw materials increased rapidly and employment declined. By the summer of 1938, some prospects for improvement had appeared in the United States, particularly in the recovery of securities and of commodity prices. Whether this was to develop into a complete recovery or to be a false start, like that of early 1930, was not clear at the time the report went to press. It was obvious, however, that many economic readjustments had not yet been completed, and the threatening political situation in Europe held unfavorable possibilities.

The report is full of helpful statistical information which helps the reader to obtain a perspective of the present economic situation. The great volume of specific facts, as presented, make the report a valuable source for reference. The writer's problem as regards presentation, however, was a difficult one, and was not solved successfully in all respects. There are so many different series of economic data and they needed to be summarized for so many different countries that much of the report makes tiresome reading. It might have been useful to a wider range of readers if the author had digested his data more thoroughly before writing the report.

J. A. HOPKINS

Iowa State College

Family Incomes and Land Utilization in Knox County, by W. D. Nicholls, J. H. Bondurant, and Z. L. Galloway. Kentucky Agricultural Experiment Station, Bulletin 375, 1937. Pp. 158-219.

The average spendable net farm income was \$68 for the one year 1932 on the 176 farms reported in this study. This is a startlingly low figure to many persons whose experience is limited to more favorable agricultural regions. Knox County has much submarginal land and a relatively dense population (63 persons per square mile in District 3, and 33 in District 4). Thus the problem of dealing with this land is much different than in submarginal areas from which most of the people have migrated.

Knox County is typical of the mountain region of eastern Kentucky which comprises about one-fourth the area and population of the state. This region is part of the Cumberland Plateau. The elevation of the region ranges from about 1,000 to 1,500 feet.

Approximately 90 per cent of the land has a slope of more than 15 feet in 100 foot distance and approximately 60 per cent of all the land has a slope of 40 per cent or more.

Previous to 1930 the people in this region derived a large portion of their incomes from lumbering and coal mining. Of 228 typical farm families in 1930, only one per cent derived their living mainly from farming. Since 1929 the opportunities for acquiring an income from non-farming sources have decreased to a considerable extent. During a considerable part of 1933 and 1934 more than half of the families in the region were on public relief.

"The purpose of the study was to obtain information which should furnish a basis which would be useful to the people of the region in forming judgments as to their present and future plans, and to public agencies needing information upon which to base action on such questions as public relief and the purchase of land for state or national forests."

About 64 per cent of the land, included in this survey, was in woods and brushland, 3 per cent in idle land, 19 per cent in pasture, 12 per cent in harvested crops, and 2 per cent in miscellaneous ("Village of Flat Lick, roads, railroads, orchards, oats, sorghum, and Cumberland River"). Corn was the principal crop and occupied about 68 per cent of all land in harvested crops. Hay crops occupied 11 per cent of the harvested area.

A relatively new term to some students of agriculture is "cycle of land use," a cycle of cropping, brush, timber and then reclearing for the second cycle. On the hillsides the cycle averages about 24 years in length. "During this period an average of five crops of corn may be expected on land cleared for the first 24-year period and three crops on the second clearing for a similar period."

The farms averaged $63\frac{1}{2}$ acres in size for the entire area, with an average of $9\frac{1}{2}$ acres of bottom and well-lying land. About one-half of the farm operators had as much as 5 acres of well-lying ground. The authors make no comment regarding the possibility or merit of increasing the size of farm area as a means of improving farm family income.

"The principal bases used in classifying the land in this study were topography, soil, present use of the land and the condition of buildings. The land was divided into three classes according to the intensity of present and probable future uses." One might well wonder how much the classification may have depended upon the

authors' ideas as to the probable future use of the land and how much on present criteria. The rating of the buildings was apparently judged entirely by the condition of the farm house.

"Although the land is essentially submarginal from the point of view of commercial farming, any attempt at the present time to stimulate the evacuation of these areas would be unwise." The authors make the comment, however, that farming on land in Class II, about 76 per cent of the total acreage of the region included in the study, "should eventually be abandoned and the land reserved for permanent forest area." It would seem that the authors were playing safe for the present, but had hopes that something might happen in the social or industrial life of the next generation which would permit the evacuation of this region. When one considers that the abandonment of farming in about 76 per cent of the acreage of this region would require the evacuation of approximately 35 per cent of the population of one-fourth of Kentucky the authors' opinion in this regard seems to be based more on a hope than on reality. Since so little reference is made to terraces and strip cropping, the reader is left to assume that not much help can be expected from such practices.

The reader wonders why so long an interval exists between the period of the study and the publication. The study covers the two years 1932 and 1933, yet the bulletin carries a date line of November, 1937. The farm income data on which much of this bulletin is based are only for the one year, 1932. This happens to be about the lowest income year of the decade. Although the income in this region would always be quite low, the reader might wonder how much it might have been in 1929 or in 1937, the year the bulletin was published.

The reader who is particularly interested in the general organization and operation of the more successful as contrasted with the less successful farms in the region, will not find such an analysis presented in the bulletin. Neither are any data shown relative to the major factors affecting farm earnings in the region. No mention is made in the bulletin relative to livestock production records or to production practices followed on these farms. The authors' approach to an improved farm program is by the budget method.

On the whole, the authors of this bulletin, present in a very creditable manner the relation between density of population, size of family incomes, size of farms, and land utilization in an area

where much of the land is not favorable to commercial agriculture. It would seem that the authors used good judgment in the interpretation of the data.

E. B. HILL

Michigan State College

An Island Community,—Ecological Succession in Hawaii, by Andrew W. Lind. Chicago: Univ. of Chicago Press, 1938. xxii, 337 pp., \$3.00.

This book is a recent addition to the University of Chicago Sociological Series by a former student of that University who is now Professor of Sociology in the University of Hawaii. The author indicates the limits of his subject when he tells us that it is conceived within the "emerging discipline of human ecology" which is defined as "the science of 'sustenance and place relations of individuals and institutions'." The fortunes of the native Hawaiians and the various immigrant groups in the islands are here surveyed with the help of numerous charts and exhaustive statistics of population, production, and occupation.

The commercial links between the islands and the United States were established by Yankee merchantmen who stopped to load sandalwood for China, and by whalers who found them a convenient mid-ocean base. After the California gold-rush, Hawaii became an important source of foodstuffs for the new market on the mainland, and it is the growth of sugar cane and pineapple plantations which has been chiefly responsible for the remarkable agricultural development of the Territory since that time.

The era of plantation expansion did not begin until 1850, and most of the differences between the plantation system in Hawaii and in the East and the West Indies can be traced to this late start in the former. Slavery was by then obsolete; absentee ownership had lost its old attractions; the importance of scientific methods of production was being recognized; and, as far as sugar in particular was concerned, the world's output was increasing, cane was being challenged by beet; and while the old plantation colonies struggled to repair the wreckage of the former system of slavery, monopoly and privilege, the Hawaiian pioneers had to make an entirely new start. Hence agricultural development in Hawaii has been characterized by local ownership, the importation of large numbers of laborers on wage contracts, extensive capital investment in special-

ized production techniques, and constant scientific research. Missionaries were among the first owners of plantations, and the chief figures in the "Big Five" agency firms which now handle 96 per cent of the sugar output are the grandchildren of early missionaries. The lack of native labor caused the planters to adopt a policy of organized immigration from other countries which has introduced into Hawaii Chinese, Japanese, Puerto Ricans, Portuguese and Filipinos to the number of over 400,000—more than the total present population, for one of the chief problems of the plantations has been to retain the service of the laborers imported. And not only has labor been scarce; for a tropical country it has also been costly. This higher wage level is another striking difference between Hawaii and the older plantation areas. And while free entry into the United States market enables the Territory to incur higher costs than producers elsewhere who have to sell in the open market, the returns both of cane per acre and of sugar per ton of cane compare favorably with those in other parts of the world, and show the high level of efficiency to which research and investment have raised the industry in Hawaii.

Professor Lind, however, is interested primarily in the ecology of the ethnically diverse population, and not in the economic questions of cost combinations which are more within the scope of this JOURNAL. And indeed, the conclusion which he reaches after a short discussion of plantation costs, "The point of *marginal utility in the process of advancing technical efficiency* is difficult to determine with any accuracy under the complex organization of Hawaiian plantations," suggests that a subject which is so little understood had better be omitted completely. But such few arbitrary excursions into economics in no way detract from the great value of his study to students of racial and cultural problems.

I. C. GREAVES

Iowa State College

NEWS ITEMS

Nomination of Council Members from the United States to the International Conference of Agricultural Economists

During the International Conference of Agricultural Economists held at Macdonald College, the latter part of August, the council members from the United States called together the American members of the conference. Approximately 50 members from the United States attended the meeting. The purpose of the meeting was to discuss the method of electing council members for the next conference and to nominate candidates. The following were nominated for the position of members of the council from the United States: H. C. M. Case, B. H. Hibbard, Asher Hobson, C. E. Ladd, M. L. Wilson, E. C. Young.

It was further requested that the President and Secretary of the American Farm Economic Association prepare suitable notices relative to the election of council members from those nominated and that the ballots be mailed to members by the Secretary of the American Farm Economic Association. The sealed ballots are to be turned over to Dr. H. C. Taylor for counting and announcement of the election. It is understood that the election will be held early in 1939. Voting privileges will be limited to those who have paid their dues to the conference at the time the ballots are mailed.

Signed

H. C. M. CASE, *Chairman*

ASHER HOBSON

C. E. LADD

More than 500 members and visitors attended the International Conference of Agricultural Economists held at Macdonald College, Quebec, during the week of August 21-28. The United States sent a large delegation with almost every state and institution represented. Members from Europe numbered more than sixty, with large delegations from the United Kingdom and Germany. Delegates were present from nineteen countries. A tour of Quebec during the week preceding the Conference was enjoyed by some thirty members and two additional groups made post-conference tours of Ontario and Western Canada as far as the Rocky Mountains.

In the papers presented during the week, the effect of economic developments on social progress was emphasized. A number of sessions were devoted to miscellaneous subjects, and a larger number of group sessions than has heretofore been provided, were well attended. The Conference decided to hold its next session in Hungary in 1941.

During the past year a reorganization of the Canadian Department of Agriculture has been effected. The nine Branches that had hitherto existed were consolidated into four Services—Production, Marketing, Science and Experimental Farms. A. M. Shaw, formerly Dean of the College of Agriculture of the University of Saskatchewan, has been made Director of the Marketing Service, which now comprises all of the marketing activities formerly carried on by four separate Branches. The Economics Branch is also a Division of this new Service. Dr. J. F. Booth, formerly Commissioner of Agricultural Economics, has been made Associate Director of the new Service in Charge of Agricultural Economics. An additional Associate and Assistant Director in charge of other Divisions has also been provided.

R. L. Adams, Professor of Farm Management at the University of California was invited to Washington for the period September 7 to 9, inclusive. He was one of a group of twelve delegates, one from each of the districts comprising the Farm Credit Administration.

W. Allen, Head of the Department of Farm Management, University of Saskatchewan, has been appointed Agricultural Commissioner for the Dominion Department of Agriculture, with headquarters in London, England.

C. L. Alsberg, Director of the Giannini Foundation of the University of California attended the annual meeting of the Social Science Research Council, which was held at Buck Hill Falls near Cresco Station, Pennsylvania.

Frank M. Atchley has accepted a position on the farm management staff at the Michigan State College of Agriculture.

L. Jay Atkinson has been appointed Instructor in Agricultural Economics at Connecticut State College, replacing Leonard A. Salter, Jr.

John Baker, formerly a member of the Washington staff of the Farm Security Administration, has a fellowship in Agricultural Economics at the University of Wisconsin during the current year.

M. R. Benedict, Professor of Agricultural Economics at the University of California, has been attending meetings of the Census Advisory Committee in Washington, D. C., during the week of October 3, 1938.

C. A. Boonstra has recently joined the staff of the State Land Planning Specialist for Louisiana.

D. A. Broadbent has accepted a position on the staff of the Utah State Agricultural College.

A. J. Brown is a new appointee to the staff of the Kentucky College of Agriculture.

R. J. Burroughs resigned as Assistant Professor and Research Assistant in the Department of Economics at Michigan State College on July 1 to accept a position as real estate analyst in the rental division of the Federal Housing Administration at Washington, D. C.

Melville H. Cohee of the Section of Cooperative Planning of the Soil Conservation Service, Washington, D. C., sailed for Europe on July 13 where he will spend about eight months in making a study of land use regulatory measures and their administration in various European countries. This study is made possible through a grant from the Oberlander Trust established under the auspices of the Carl Schurz Memorial Foundation.

A. W. Colebank has been appointed to a position in the Dairy Section of the Agricultural Adjustment Administration, Washington, D. C.

Eldon B. Colegrove accepted a position with the Farm Security Administration in Illinois.

W. S. Crawford, former Assistant Supervisor of Rural Research in South Carolina, has been appointed Assistant in Agricultural Economics, University of Tennessee, succeeding Paul T. Sant, resigned.

Bradford Dean Crossmon, former Graduate Assistant in Farm Management at Connecticut State College, has been appointed Instructor in Farm Management at the College, replacing Albert Harmon Fienemann.

M. Gale Eastman has been appointed Vice-Director of the Agricultural Experiment Station, Durham, New Hampshire.

J. N. Efferson has joined the faculty of the Department of Agricultural Economics, Louisiana State University, as Assistant Professor of Statistics and Prices.

R. J. Eggert, of Minnesota, has been appointed Assistant Professor of Agricultural Economics at Kansas State College.

Russell C. Engberg, formerly chief of the Joint Stock Land Bank Section, Land Bank Division, Farm Credit Administration, Washington, D. C., was appointed District Director of Research, Farm Credit Administration of Omaha, effective September 16, 1938.

Robert Horace Farr and Leonard Ward Parker, formerly in Agricultural Economics at Connecticut State College, are at present employed as Assistant Agricultural Economists with the Dairy Section of the Agricultural Adjustment Administration, Washington, D. C.

Leo Fenske has been appointed assistant in Agricultural Economics at the University of Minnesota.

T. N. Gearreald has been appointed as Associate Professor of Marketing at the Virginia Polytechnic Institute.

B. M. Gile, formerly in charge, Federal Land Utilization Program, Region VI, has joined the faculty of the Department of Agricultural Economics, Louisiana State University, as Professor of Land Economics and Agricultural Finance.

R. M. Green, manager of the Federal Crop Insurance Corporation, has resigned to become District Agent for the Farm Credit Administration at Wichita, Kansas.

Harold Halcrow has been appointed instructor in the Department of Economics and Sociology, Montana State College.

W. O. Hedrick, Professor of Economics at Michigan State College for forty-five years, retires from active duty this fall. Dr. Hedrick joined the faculty of M.S.C. in 1893 when the entire faculty, numbering less than 20, was no larger than the Economics staff at the present time.

Carl P. Heisig has accepted a position as assistant agricultural economist with the Bureau of Agricultural Economics. He will be stationed at the new office in Berkeley.

Homer J. Henney, formerly Assistant Professor of Agricultural Economics at Kansas State College, has resigned and accepted employment with the Federal Crop Insurance Corporation.

Louis F. Herrmann, Assistant in Agricultural Economics, is spending the year at the University of Minnesota taking graduate work.

F. F. Hill, Deputy Governor, has been appointed Governor of the Farm Credit Administration, Washington, D. C.

Harold F. Hollands has been appointed Acting Head of the Department of Farm Management and Agricultural Economics of the State College of Washington, during the absence of Ben H. Pubols, Head of the Department. Mr. Pubols has been granted a leave of absence for one year to continue graduate work at Harvard University.

Earl M. Hughes has accepted an appointment as Associate in Farm Management in the Department of Agricultural Economics, University of Illinois.

Kenneth M. Hunter, formerly Acting Assistant Professor of Finance in the School of Business, University of Colorado, has joined the staff of the Research, Service and Educational Subdivision, Cooperative Division, Farm Credit Administration, Washington, D. C.

D. B. Ibach, Extension Specialist in Farm Management, has been granted a year's leave of absence beginning November 1. He will spend this year in working with the Farm Security Adminis-

tration in the field of farm management, devoting most of his time to assisting field supervisors in Missouri with their farm management problems.

Don R. Keene has been promoted from Instructor to Assistant Professor of Agricultural Economics at North Dakota Agricultural College.

W. E. Keepper has accepted a position of Assistant Professor of Land Economics at the Pennsylvania State College. For the past several months Dr. Keepper has been engaged in Extension work at Cornell University.

Frank P. King has been elected to the position of Associate Professor of Farm Management, University of Georgia, Athens, Georgia. Mr. King was formerly with the Land Department of the Metropolitan Life Insurance Company.

E. Fred Koller has been appointed Assistant Professor of Agricultural Economics at the University of Minnesota.

Henry E. Larzelere has been appointed Instructor and Research Assistant in Agricultural Economics at Michigan State College, effective September 15.

J. E. Lattimer, Head of the Department of Agricultural Economics, Macdonald College, and J. Coke, Senior Agricultural Economist, Division of Economics, Marketing Service, Ottawa, acted as Chairman and Secretary, respectively, of the Canadian Committee in Charge of Arrangements for the International Conference at Macdonald College.

J. Karl Lee has accepted a position in the Agricultural Economics Department of the Colorado State College of Agriculture.

F. F. Lininger was appointed Head of the Department of Agricultural Economics of the Pennsylvania State College on July 1. Dr. Lininger succeeds F. P. Weaver who resigned as Head of the Department February 1, because of illness. Dr. Lininger has been with the Department at Penn State since 1925 and for the past several years has had charge of the marketing division.

The General Education Board on July 1, 1938, in cooperation with Louisiana State University, entered upon a broad program of development primarily at the graduate level for teaching and research in the field of agricultural economics. Funds of the Board are primarily for the purpose of providing greater assistance to graduate students, physical equipment, library development, and maintenance of broader research activities. In this connection a departmental library has been established and is in process of development.

H. M. Love has been appointed Associate Professor of Farm Finance at the Virginia Polytechnic Institute.

Howard Mayne is now a member of the staff of the Milwaukee Regional Office of the Bureau of Agricultural Economics, United States Department of Agriculture.

Richard G. Milk of Cornell, Dale P. Cleveland of Texas A. & M., and Luther P. Bohannon of Tennessee have been appointed Research Assistants at University of Tennessee.

D. R. Mitchell of the Department of Agricultural Economics, University of Wisconsin, has been promoted from Instructor to Assistant Professor.

David Moyer has accepted a position with the Tobacco Section of the Agricultural Adjustment Administration.

William I. Myers, Governor of the Farm Credit Administration, returned to Cornell University during September where he will head the Department of Agricultural Economics and Farm Management.

Kenneth Ousterhout accepted a year's appointment as Assistant Extension Specialist and Research Assistant in Farm Management at the Michigan State College.

G. Leroy Peterson has been appointed Instructor in Agricultural Economics at the University of Minnesota.

O. A. Parsons has been appointed Assistant Professor in the Department of Economics and Sociology at Montana State College. Mr. Parsons replaces Phil S. Eckert who resigned to complete his graduate work at Ohio State University.

Harald S. Patton, who has served during the past year as Assistant Economic Advisor on International Affairs in the Department of State, Washington, on leave of absence from Michigan State College, resumed his duties as head of the Economics Department of the College on September 1.

Ronald Ranson recently accepted a position with the Equitable Life Assurance Society.

A. E. Richards, Agricultural Economist, Economics Division, Ottawa, is now registered at Cornell. G. H. Craig of the same Division is at Harvard, and S. C. Hudson who has recently returned from a year at Cambridge, England, has resumed his work with the Division at Ottawa.

S. A. Robert, of the State Land Planning Office in Mississippi, is now Acting Land Planning Specialist for the state.

H. C. Sanders, formerly District Agricultural Extension Agent for Northwest Louisiana, was promoted to State Agent (Assistant Director) effective July 1.

Paul T. Sant has been appointed temporary Land Planning Specialist for Tennessee to serve during the absence of John E.

Mason who is on leave while doing graduate work at University of Minnesota.

M. H. Saunderson, Agricultural Economist at the State College has resigned to become Senior Economist with the U. S. Forest Service, Ogden, Utah.

M. A. Schaars of the Department of Agricultural Economics, University of Wisconsin, has been promoted from Assistant to Associate Professor.

Glenn R. Smith, Associate Agricultural Economist of the Department of Agricultural Economics, N. C. State College, has been granted a leave of absence until June 1939 for the purpose of completing his graduate work at Cornell University.

Lloyd Spaulding is now a member of the staff of the Bureau of Agricultural Economics of the United States Department of Agriculture as Assistant State Land Use Planning Specialist in the state of Iowa.

E. A. Stokdyk, President of the Berkeley Bank for Cooperatives, has been granted a year's leave of absence from the Berkeley Bank for Cooperatives to become Deputy Governor of the Farm Credit Administration in Washington. He is to be in charge of research and service activities of the Farm Credit Administration.

John F. Timmons has been assigned to the Land Tenure Section of the Bureau of Agricultural Economics, and reported for duty at Little Rock, Arkansas.

Orion Ulrey, Assistant Professor in Agricultural Economics at Michigan State College, returns to his duties about September 26 after a summer tour of three months in European countries. On this trip, Dr. Ulrey has made a particular study of the cooperative movement in the Scandinavian countries.

The Department of Agricultural Economics and Rural Sociology of Virginia Polytechnic Institute was the recipient on July 1, 1938, of a grant of funds from the General Education Board amounting to \$49,400. This grant is to be spent over a two-year period and is to be used for the following purposes: (1) Increasing the personnel of the department; (2) building up of a library in Agricultural Economics and Rural Sociology.

Hadley Van Vleek has joined the staff of the Department of Economics of the University of Saskatchewan, Canada.

Everett C. Weitzell, on leave of absence from the West Virginia Agricultural Experiment Station from September 15 to January 31, 1939, is doing graduate work in Land Economics at the University of Wisconsin.

H. C. Woodworth, Professor of Agricultural Economics and Agricultural Economist, has been appointed head of the Depart-

ment of Agricultural Economics at the University of New Hampshire.

Karl T. Wright of the Farm Management Department of the Michigan State College has a year's leave of absence for graduate study at Cornell University.

Major changes in the structure of the United States Department of Agriculture were announced October 6 by Secretary Henry A. Wallace. The changes are designed, the Secretary said, to expedite the services of the Department to the public.

The new Department organization unifies four lines of work:

(1) Forming of programs and plans to guide the entire group of agricultural adjustment, conservation and marketing services to farmers and the general public is assigned to the Bureau of Agricultural Economics, which will be charged with Department-wide responsibility.

(2) Execution of marketing work is lodged in four units responsible to the Secretary through a Director of Marketing and Regulatory Work.

(3) The execution of all physical land-use programs which involve operations by the Government on farm lands is consolidated in the Soil Conservation Service.

(4) Research work in the field of agricultural and industrial technology is placed under unified direction.

To direct the planning work H. R. Tolley leaves the post of Administrator of the AAA and becomes Chief of the reconstituted Bureau of Agricultural Economics.

To consolidate the marketing work, A. G. Black leaves the post of Chief, Bureau of Agricultural Economics, and becomes Director of Marketing and Regulatory Work. His associates, the chiefs of the four agencies combining all marketing and regulatory activities will be: Jesse W. Tapp (formerly Assistant Administrator, AAA), surplus commodity diversion and marketing agreements programs; C. W. Kitchen (formerly Assistant Chief, Bureau of Agricultural Economics), marketing research, service, and regulatory work; J. W. T. Duvel, continuing as Chief, Commodity Exchange Administration; and Joshua Bernhardt, continuing in charge of activities under the Sugar Act of 1937.

The consolidation of physical operations in land-use programs for farm land brings them all under H. H. Bennett, Chief, Soil Conservation Service.

R. M. Evans leaves the post of Assistant to the Secretary and becomes Administrator of the AAA.

To speed the attack on the problem of widening the uses of farm products is the purpose of bringing technological research work,

including that in the Bureau of Chemistry and Soils, and that in the Bureau of Agricultural Engineering under the Chief of Chemistry and Soils, H. G. Knight.

Included in the reorganization is the establishment of an Agricultural Program Board for cooperative review of plans and programs. M. S. Eisenhower will continue as Land Use Coordinator and will serve as Chairman of the new Planning Board.

In making the announcement, Secretary Wallace said:

"It is imperative that we establish over-all planning work for the whole Department in order to provide for proper functioning of the many new activities authorized in recent years by the Congress. It has become all the more necessary since the Department last July entered into a significant and far-reaching agreement with the Land Grant College Association. Under the agreement the Colleges and the Department are establishing democratic procedures that will give farm people an effective voice in forming, correlating, and localizing public agricultural programs. Farm people and official agencies in the States are now forming community, county, and State groups to carry on land-use planning and program building. In the expanded Bureau of Agricultural Economics, the Department is now establishing its part of the machinery needed to integrate State and local planning with general planning and program-farming activities within the Department."

Further details as to the new organization of the Department are not available at this time.

1938 ANNUAL MEETING

The provisional program for the twenty-ninth annual meeting of the American Farm Economic Association is printed on the following pages. The meeting is to be held December 28-30, 1938, at the Detroit-Leland Hotel, Detroit, Michigan. Copies of the final program showing the meeting place for each session will be available at the registration headquarters.

Following the procedure of last year, most of the sessions have been limited to two papers and two formal discussions. This limitation of formal papers permitted more time for open discussion from the floor. Participants have been asked to limit the time required for their papers and chairmen have been asked to handle the meetings so as to provide opportunity for general discussion. The program reflects the generous response of the membership to requests for suggestions, for assistance in developing the program and for papers.

**PROGRAM FOR THE TWENTY-NINTH ANNUAL
MEETING OF THE AMERICAN FARM
ECONOMIC ASSOCIATION**

DETROIT-LELAND HOTEL, DETROIT

DECEMBER 28-30, 1938

Wednesday, December 28

Wednesday Forenoon

10:00 A.M.—THE PROBLEM OF FARM OPERATION UNDER THE AAA

Chairman: B. H. Hibbard, University of Wisconsin.

- (1) "Effect of the AAA Program on Regional Specialization in Agriculture"

H. B. Rowe, The Brookings Institution.

- (2) "Effect of the AAA Program on the Organization and Operation of the Individual Farm"

P. E. Johnston, University of Illinois.

Discussion: W. W. Wilcox, Iowa State College

R. J. Saville, Louisiana State University.

Wednesday Afternoon

2:30 P.M. (I)—PUBLIC CONTROL OF LAND USE

Chairman: M. L. Wilson, U. S. Department of Agriculture.

- (1) "Public Control of Land Use in Europe"

Karl Brandt, Stanford University.

- (2) "Public Control of Land Use in the United States"

G. S. Wehrwein, University of Wisconsin.

Discussion: M. M. Kelso, Bureau of Agricultural Economics

F. F. Elliott, Bureau of Agricultural Economics.

2:30 P.M. (II)—HOW FAST SHOULD COOPERATIVES GROW?

Chairman: O. B. Jesness, University of Minnesota.

Papers (1) H. E. Babcock, G. L. F. Exchange

- (2) Murray D. Lincoln, Ohio Farm Bureau.

Discussion: M. A. Schaars, University of Wisconsin

Frank Robotka, Iowa State College.

2:30 P.M. (III)—RESEARCH IN FARM MANAGEMENT

Chairman: J. C. Bottum, Purdue University.

- (1) "Adapting Farm Management Research to New Opportunities"

S. E. Johnson, Bureau of Agricultural Economics.

- (2) "Research Needed for Planning the Individual Farm Business"

L. G. Allbaugh, Iowa State College.

- (3) "Soil Fertility Considerations and Farm Management"

G. W. Miller, Ohio State University.

- (4) "Methods of Approach to Present Farm Management Problems"

K. T. Wright, Michigan State College.

Wednesday Evening

6:00 P.M.—MEETING OF THE EXECUTIVE COMMITTEE

8:00 P.M.—APPRAISAL OF ACCOMPLISHMENTS IN AGRICULTURAL ECONOMICS

Chairman: H. C. Taylor, The Farm Foundation.

(1) "Contribution of Agricultural Economics to Farming"

C. E. Ladd, Cornell University.

(2) "Contribution of Agricultural Economics to the General Welfare"

H. R. Tolley, Bureau of Agricultural Economics.

Discussion: H. C. M. Case, University of Illinois

John D. Black, Harvard University.

Thursday, December 29

7:30 A.M.—GROUP BREAKFASTS

Cornell Breakfast—E. B. Hill in charge

Illinois Breakfast—R. C. Ross in charge

Minnesota-Harvard Breakfast—W. G. Murray in charge

Wisconsin Breakfast—R. V. Gunn in charge

Thursday Forenoon

10:00 A.M. (I)—LAND USE PROBLEMS OF THE GREAT PLAINS

Chairman: H. C. Filley, University of Nebraska.

(1) "Modification in Type of Farming and Other Adjustments Needed in the Great Plains"

E. A. Starch, Montana State College.

(2) "Federal Purchase and Administration of Sub-Marginal Land in the Great Plains"

L. C. Gray, Bureau of Agricultural Economics.

Discussion: E. C. Johnson, Farm Credit Administration

Peter Nelson, Oklahoma A and M College.

10:00 A.M. (II)—DEMAND FOR FARM PRODUCTS

Chairman: Mordecai Ezekiel, U. S. Department of Agriculture.

(1) "The Problem of Measuring Demand for Farm Products"

F. L. Thomsen, Bureau of Agricultural Economics.

(2) "Consumer's Income and the Demand for Certain Perishable Farm Products"

M. P. Rasmussen, Cornell University.

Discussion: L. J. Norton, University of Illinois

R. K. Froker, University of Wisconsin.

10:00 A.M. (III)—TRENDS IN FARM ORGANIZATION AND OPERATION

Chairman: O. R. Johnson, University of Missouri.

(1) "Long-Time Price Changes and Farm Operation"

S. W. Warren, Cornell University.

(2) "Mechanization and Some Other Technological Developments Affecting Farm Organization"

J. A. Hopkins, Iowa State College.
Discussion: A. A. Dowell, University of Minnesota
L. S. Robertson, Purdue University.

Thursday Noon

12:00 M.—JOINT LUNCHEON WITH RURAL SOCIOLOGICAL SOCIETY AND
AMERICAN SOCIOLOGICAL SOCIETY

- (1) "Social Effects of Recent Trends in the Mechanization of Agriculture"

C. H. Hamilton, Texas A and M College.

Discussion: W. E. Grimes, Kansas State College.

Thursday Afternoon

2:30 P.M. (I)—PUBLIC ASSISTANCE TO LOW INCOME FARMERS

Chairman: J. I. Falconer, Ohio State University.

- (1) "Public Assistance to Low Income Farmers in the North"

R. C. Smith, Farm Security Administration.

- (2) "Public Assistance to Low Income Farmers in the South"

T. Roy Reid, Farm Security Administration.

- (3) "Public Assistant to Low Income Farmers and the National Agricultural Policy"

J. S. Davis, Stanford University.

Discussion: I. G. Davis, Connecticut State College.

2:30 P.M. (II)—METHODS OF LIVESTOCK MARKETING

Chairman: H. B. Price, University of Kentucky.

- (1) "Types of Livestock Markets and the Price Structure"

R. C. Ashby, University of Illinois.

- (2) "The Relation of Changes in Livestock Marketing Methods to Changes in Prices and Other Factors"

Preston Richards, Bureau of Agricultural Economics.

Discussion: I. W. Arthur, Iowa State College

David Swanson, Chicago Livestock Producers Association.

2:30 P.M. (III)—PROFESSIONAL FARM MANAGEMENT

Chairman: D. H. Doane, Doane Agricultural Service.

- (1) "Business Ethics in Professional Farm Management"

W. W. McLaughlin, Decatur Farm Management, Inc.

- (2) "Legal Responsibilities of Farm Managers and Their Clients"

True D. Morse, Doane Agricultural Service.

- (3) "Types of Economic Research Needed by Professional Farm Managers"

Ersel Walley, Walley Agricultural Service.

- (4) "Financial Stability and Continuity of Commercial Farm Management Services"

Joseph Ackerman, University of Illinois.

- (5) "Standards and Principles of Rural Appraising" (Report of Subcommittee on Appraisals of the National Joint Committee on Rural Credit)

R. R. Hudelson, University of Illinois.

Thursday Evening

8:00 P.M.—ROUND TABLES

I.—Base Periods for Farm Price Studies

Chairman: W. C. Waite, University of Minnesota.

- (1) "Considerations Involved in the Selection of a Base Period"

O. C. Stine, Bureau of Agricultural Economics.

- (2) "The Case for the 1910-14 Base"

F. A. Pearson, Cornell University.

- (3) "The Choice of a Base in the 1920-29 Period"

E. L. Butz, Purdue University.

- (4) "The Base Period for Parity Prices"

P. H. Bollinger, Bureau of Agricultural Economics.

- (5) "The Policy of the Bureau of Labor Statistics in Selecting Base Periods"

S. W. Wilcox, U. S. Department of Labor.

II.—Land Values

Chairman: W. G. Murray, Iowa State College.

- (1) "Land Values and Government Agricultural Policy"

C. H. Hammar, University of Missouri.

- (2) "Land Values and Government Monetary Policy"

L. H. Bean, Bureau of Agricultural Economics.

- (3) "Land Values and Farm Credit Policy"

A. B. Lewis, Farm Credit Administration.

- (4) "Land Values and Commercial Bank Policy"

A. G. Brown, Ohio Citizens Trust Company.

- (5) "Land Value Changes in European Countries"

C. L. Stewart, University of Illinois.

III.—Land Problems in the Lake States

Chairman: G. E. Young, Bureau of Agricultural Economics.

- (1) "Tax Reversion and the Administration of Tax Reverted Lands"

E. J. Ellingson, Bureau of Agricultural Economics.

- (2) "Land Use Problems in Minnesota"

R. M. Gilcreast, Bureau of Agricultural Economics.

- (3) "Land Use Problems in Wisconsin"

Sidney Henderson, Bureau of Agricultural Economics.

- (4) "Land Use Problems in Michigan"

F. P. Struhsaker, Michigan Department of Conservation.

IV.—The Cost of Distributing Milk

Chairman: C. H. McBride, Ohio State University.

- (1) "Ways of Reducing Cost of Distributing Milk in Maine"

George Dow, University of Maine.

- (2) "Ways of Reducing Cost of Distributing Milk in New York"
Leland Spencer, Cornell University.
- (3) "Ways of Reducing Cost of Distributing Milk in California"
J. M. Tinley, University of California.

V.—Farm Management Extension

Chairman: P. V. Kepner, Bureau of Agricultural Economics.

- (1) "The Place of Education in Farm Finance in Farm Management Extension Work"
C. R. Arnold, Farm Credit Administration.
- (2) "The Place of Economic Information in Farm Management Extension"
V. R. Wertz, Ohio State University.
- (3) "The Place of Farm Records and Accounts in Farm Management Extension Work"
H. A. Berg, Michigan State College.
- (4) "The Need for and Use of Farm Management Facts in Building State and Regional Agricultural Programs"
J. H. McLeod, University of Tennessee.
- (5) "Farm Management Extension Work with Low Income Farmers"
I. F. Hall, University of Wisconsin.

VI.—Graphic Methods in Agricultural Statistics

Chairman: Walter Ebling, Wisconsin Department of Agriculture and Markets.

- (1) "Graphic Methods Used in Presenting Agricultural Economics to the Public"
R. G. Hainsworth, Bureau of Agricultural Economics.
- (2) "The Use of Graphic Methods in Crop Estimating"
M. M. Justin, Bureau of Agricultural Economics.
- (3) "The Place of Graphic Methods in Price Analysis"
E. J. Working, University of Illinois.

Discussion: T. C. M. Robinson, Bureau of Agricultural Economics.

C. J. Borum, Bureau of Agricultural Economics.

C. M. Purves, Bureau of Agricultural Economics.

VII.—Research in Marketing

Chairman: F. V. Waugh, Bureau of Agricultural Economics.

Friday, December 30

7:30 A.M.—CALIFORNIA GROUP BREAKFAST, J. H. Marshall in charge

9:00 A.M.—BUSINESS MEETING

Friday Forenoon

10:30 A.M. (I)—SAMPLE CENSUS OF AGRICULTURE

(Joint session with American Statistical Association)

Chairman: W. F. Callander, Bureau of Agricultural Economics.

- (1) "Developments Arising Out of the Trial Census Work in 1938"
Z. R. Pettet, Bureau of the Census.
- (2) "Development of Partial and Sample Census Methods"
C. F. Sarle, Bureau of Agricultural Economics.

(3) "Results of Four Methods of Sampling Individual Farms"

Irvin Holmes, Bureau of Agricultural Economics.

Discussion: R. L. Gillett, New York State Department of Agriculture and Markets

C. L. Dedrick, Bureau of the Census

T. W. Schultz, Iowa State College.

10:30 A.M. (II)—INTERNATIONAL TRADE

Chairman: A. G. Black, Bureau of Agricultural Economics.

(1) "The Complementary and Competitive Character of Agriculture in Latin America and the United States"

L. A. Wheeler, Bureau of Agricultural Economics.

(2) "British Empire Trade Agreements as Related to Agriculture in Canada and the United States"

J. E. Lattimer, Macdonald College.

(3) "Foreign Trade Policy in the United States in Relation to the Internal Agricultural Policy"

Carl Alsberg, University of California.

Discussion: Asher Hobson, University of Wisconsin.

10:30 A.M. (III)—FARM CREDIT

Chairman: F. W. Peck, Federal Land Bank of St. Paul.

(1) "Servicing Federal Land Bank Loans Through National Farm Loan Associations"

M. S. Kennedy, Federal Land Bank of Louisville.

(2) "Plans and Policies Used in Servicing Farm Loans and Negotiating New Loans"

T. M. Beal, Mutual Benefit Life Insurance Company.

Discussion: E. H. Thomson, Federal Land Bank of Springfield

C. U. Jett, Fidelity Mutual Life Insurance Company

Friday Noon

12:30 P.M.—ANNUAL LUNCHEON

(1) "The Future of Cooperative Farm Credit in the United States."

W. I. Myers, Cornell University.

Friday Afternoon

2:30 P.M.—FACTORS MAKING FOR CHANGE IN THE CHARACTER OF THE BUSINESS CYCLE

(Joint session with the American Economic Association)

Chairman: James W. Angell, Columbia University.

(1) "The Significance of the Growing Importance of Durable Consumers' Goods"

Raymond J. Saulnier, Columbia University.

(2) "The Role of Agriculture"

F. A. Pearson, Cornell University.

(3) "The Role of the Social Security Program"

Fritz Lehman, New School.

4:30 P.M.—MEETING OF THE EXECUTIVE COMMITTEE

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Forfeiture of Real Property Rights through Tax Delinquency.....H. K. Allen
Land Credit Practices and Successful Farm Operation.....R. R. Renne
Reflections on the Single Tax: In Light of the California Plan of 1938....
.....Robert B. Pettengill

Land Resources Department—Items Appearing Soon

- Flood Plain Zoning: As Provided in the Ordinance of Jefferson County,
Wisconsin.....J. M. Albers
Weed Control Legislation.....H. A. Hockley
Farm Tenure Activities in Tennessee.....Joe A. Elliott

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1938 Annual Meeting

THE AMERICAN FARM ECONOMIC ASSOCIATION

Detroit, Michigan

December 28, 29, and 30

The headquarters of the Association will be at the Detroit-Leland Hotel, where a registration and information desk will be maintained. Members are requested to register as soon as possible after arrival. Reservations should be made at an early date. The rates at the Detroit-Leland Hotel are as follows: single room, \$2.50 and up; double room, \$4.00 and up.

Following are the rates at some of the nearby hotels:

	<i>Single</i>	<i>Double</i>	<i>Triple</i>
Book-Cadillac Hotel	\$3.00 and up	\$5.00 and up	
Fort Shelby Hotel	\$2.50 " "	\$5.00 " "	
Statler Hotel	\$2.50 " "	\$4.50 " "	\$6.00 and up
Tuller Hotel	\$2.00 " "	\$3.50 " "	\$5.25 " "

Further details will be furnished members by letter around December 1.

SEE PRELIMINARY ANNOUNCEMENT OF THE
PROGRAM
PAGES 911-916 THIS ISSUE OF
THE JOURNAL

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Applications for membership or inquiries regarding the general affairs of the Association should be addressed to Asher Hobson, Department of Agricultural Economics, University of Wisconsin, Madison, Wisconsin.

